CHAPTER 5
CUMULATIVE EFFECTS

CHAPTER 5 TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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Chapter 5 Cumulative Effects

5.1 Introduction

As required under the National Environmental Policy Act of 1969 (NEPA) and the regulations implementing NEPA, this section analyzes potential cumulative impacts from past, present, and reasonably foreseeable future actions (RFFAs) combined with the Proposed Action within the Cumulative Effects Study Area (CESA) specific to the resources for which cumulative impacts may be anticipated. A cumulative impact is defined as "the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and RFFAs, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 Code of Federal Regulation [CFR] 1508.7). This analysis focuses on cumulative impacts of the Proposed Action and other actions both within and outside of the Proposed Action area. Major past and present land uses and disturbances within the resource CESAs that are projected to continue into the future include mineral development and exploration, utilities, infrastructure and public purpose projects, roads, wildland fires, livestock grazing, agriculture, and mining. Dispersed recreation (including hunting, fishing, and off-highway vehicle [OHV] use) and residential development also occur and are expected to continue in portions of the CESAs.

The sizes of the CESAs vary by resource. Cumulative effects should be evaluated in terms of the specific resource, ecosystem, and human community being impacted. To determine the size of the CESAs, each environmental resource was analyzed to determine the extent to which the environmental effect from the project could be reasonably detected and the geographic area impacted was defined. However, for simplicity, ease of cumulative effect analysis, and in an attempt to avoid having slightly different CESAs for a number of resources, CESA boundaries were left identical for multiple resources where it seemed reasonable and conservative to do so.

Nevada Bureau of Land Management (BLM) Instruction Memorandum NV-90-435 specifies that impacts must first be identified for the Proposed Action (i.e. Newmont, Long Canyon Mine Project) before cumulative impacts with other actions can occur (BLM, 1990).

For the purposes of this analysis and under federal regulations, "impacts" and "effects" are assumed to have the same meaning and are interchangeable. The cumulative effects analysis was accomplished through the following steps:

- Step 1: Review and assess the BLM's Data Adequacy Standards that determine the level of evaluation necessary to analyze the potential effects of the Proposed Action;
- Step 2: Establish appropriate geographical area CESAs for analysis by resource;
- Step 3: Identify the past, present, and RFFAs relevant to the resources in the CESAs;

- Step 4: Summarize the effects of the Proposed Action in conjunction with past, present, proposed, and RFFAs; and

- Step 5: Provide a cumulative impacts analysis and discussion.

Information utilized in the cumulative impacts analysis was gathered from the following sources: BLM's Legacy Rehost 2000 System (LR2000), the Nevada Atlas and Gazetteer, Geographic Information System (GIS) shapefiles provided by the BLM, Nevada Department of Wildlife (NDOW), and the Nevada Bureau of Mines and Geology, aerial photography, Elko County Master Plan and recorded maps, and existing Environmental Assessment (EA) and Environmental Impact Statement (EIS) documents.

Environmental consequences of the Proposed Action and alternatives are described in Chapter 4. Since no direct or indirect impacts to Native American Concerns associated with the Proposed Action were identified in Chapter 4, they are not addressed in the cumulative impacts discussion. Based upon the analysis conducted for each resource, it was determined necessary to analyze cumulative impacts for the following resources:

- Surface Water, Groundwater, Wetland and Riparian Resources;
- Migratory Birds and Small Mammals;
- Air Resources;
- Wilderness Characteristics Resources;
- Cultural Resources;
- Recreation and Land Use;
- Visual Resources;
- Big Game Resources including:
    - Mule Deer
    - Elk
    - Pronghorn Antelope;
- Special Status Species Greater Sage-Grouse;
- Grazing and Range Resources;
- Noxious and Invasive Species;
- Soils;
- Vegetation including Noxious and Invasive Weeds and Special Status Species;
- Paleontology;
- Geology and Minerals;
- Transportation;
- Socioeconomics and Environmental Justice; and
- Hazardous Materials and Wastes.

The geographical areas considered for the analysis of cumulative effects are illustrated on the CESA figures for each resource as described in Table 5.1-1. The CESA boundaries vary in size and shape to reflect each evaluated resource. Table 5.1-1 outlines the CESAs and their sizes.

Table 5.1-1 Cumulative Effects Study Area by Resource

Resource	Cumulative Effects Study Area	Size of Area (acres)	Figure
Surface Water, Groundwater, Wetlands and Riparian Resources	Includes the Goshute Valley Hydrographic Basin (Basin 187), and a 0.25-mile wide corridor along the pipeline.	653,704	5.5-1
Migratory Birds and Small Mammals, Golden Eagles and Air Quality Resources	Includes the Goshute Valley Hydrographic Basin (Basin 187) and the Thousand Springs Valley Hydrographic Basin (Basin 189D).	923,194	5.9-1
Wilderness Characteristics Resources	The Lands with Wilderness Characteristics Inventory Area including Pequop LWC Inventory Area.	63,235	5.13-1
Cultural Resources	Includes ethnographic relationships between Pequop Mountains and Goshute Valley and local recreational use area, and includes the Thousand Springs Valley Hydrographic Basin (Basin 189D).	455,198	5.14-1
Recreation and Land Use	The BLM Wells Field Office boundary	5,960,191	5.15-1
Visual Resources	Local VRM area plus a one-mile corridor along the pipeline from the project area through Hydrographic Basin 189D.	234,082	5.16-1
Mule Deer	Hunt Units 71, 72, 73, 74, 75, 76, 77, 78, 79, and 91.	3,797,521	5.11-1
Special Status Species Greater Sage-Grouse	Includes the Gollaher and East Valley PMU.	2,563,719	5.11-2
Elk	Hunt Units 76, 77, 78, 79, 81, 105, 106, 107, and 109.	3,428,030	5.11-3
Grazing and Range Resources; and Noxious and Invasive Species	Includes the West Big Springs, East Big Springs, Pilot Valley, Gamble Individual, and Dairy Valley Grazing Allotments.	1,039,527	5.10-1
Pronghorn Antelope	Hunt Units 76, 77, 78, 79, 81, 91, 105, 106, 107, and 121.	4,284,654	5.11-4
Vegetation, Soils, Paleontology, Geology and Minerals	Includes the project area, plus Section 21, T35N, R66E and a 0.25-mile wide corridor along the pipeline.	37,207	5.7-1
Transportation and Hazardous Materials and Waste	Includes I-80 from Carlin, NV to West Wendover, NV; County Road 790, State Route 233, and County Road 765 to the terminus of the proposed pipeline.	N/A	5.15-2
Socioeconomics and Environmental Justice	Elko County.	11,007,253	5.18-1

Table 5.1-2 outlines some of the actions considered in the cumulative impacts analysis, their status, and potential environmental impacts to resources.

Table 5.1-2 Summary of Activities that May Cumulatively Affect Resources

Project Descriptions	Status	Anticipated Resources that could be Cumulatively Impacted
Mineral Development and Exploration		
Mining and Exploration Plans	PP, RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
Exploration Notices	PP, RF	1, 2 , 3, 4, 5, 6, 7 ,8 ,9, 10, 11, 12
Sand and Gravel Extraction Operations	PP	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
	RF	1, 2, 4, 5, 6, 7, 8, 9, 10,11, 12
Utilities Infrastructure and Public Purpose		
Utility Lines (water lines, power lines, fiber optic lines and telephone lines)	PP	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
	RF	1, 2, 5, 8, 9, 10, 11
Railroads and Airports	PP	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12
Public Purpose (sewage treatment facilities, landfills, prisons, etc.)	PP	5, 7, 8, 9, 11
	RF	5, 7, 9, 11
Oil, Gas and Geothermal Development		
Oil, Gas and Geothermal Development	PP	1, 2, 4, 5, 6, 7, 8, 9, 10, 11
Roads		
Federal	PP	1, 2, 3, 4, 5, 6 ,7, 8, 9, 10, 11, 12
State	PP	1, 2, 4, 5, 6, 7 ,8, 9, 10, 11, 12
Local/County	PP	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
	RF	5, 7, 9, 10, 11
Forest Service	PP	5, 7
Bureau of Land Management	PP	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Other Roads	PP	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12
	RF	5, 7, 9, 10, 11
Recreation and Conservation		
West Wendover Equestrian Park	PP	5, 8, 9, 11
Hawkwatch International Research Project in the Goshute Peak WSA	PP	5, 8, 9, 11
Leppy Hills Trails System	PP	5, 7, 8, 9, 11
Wells Golf Course Expansion	RF	5
Bluebell/Goshute Water Improvement Project	RF	1, 2, 5, 8, 9, 11
Wild Horse Eco Sanctuary	RF	1, 2, 4, 5, 6, 7, 8, 9, 11
Wildfires		
Wildfires	PP, RF	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Urban Development		
Port of West Wendover	RF	5, 8, 9, 11
Wendover Project, LLC	RF	5, 8, 9, 11

PP = Past and Present Actions
RF = Reasonably Foreseeable
1 = Surface Water, Groundwater, Wetlands and Riparian Resources
2 = Migratory Birds and Small Mammals, Golden Eagles and Air Quality Resources
3 = Wilderness Characteristics Resources
4 = Cultural Resources
5 = Recreation and Land Use
6 = Visual Resources
7 = Mule Deer
8 = Special Status Species Greater Sage-Grouse
9 = Elk
10 = Grazing and Range, and noxious and invasive species
11 = Pronghorn Antelope
12 = Vegetation, Soils, Paleontology, Geology and Minerals

5.1.1 Time Frame for Analysis

The reasonably foreseeable estimated timeframe for the cumulative impact analysis is presented in Table 2.3-2. This includes the estimated 14 years to complete mining activities.

5.1.2 Past, Present, Reasonably Foreseeable Future Actions, Disturbances and Projects

Projects are defined for this draft EIS (DEIS) as activities that could interact with the Proposed Action in a manner that would result in cumulative impacts. Projects have been grouped as past, present, and RFFAs. The projects are listed in Table 5.1-3 and described below. Surface disturbance characteristics were selected to describe the projects because it allows the combined surface disturbance impacts of all projects to be totaled. However, acres of disturbance are not applicable to socioeconomics, environmental justice, and hazardous materials and wastes impacts; therefore, impacts to those resources are discussed qualitatively.

The reclamation acreages for past and present disturbance acres displayed in Table 5.1-3 have been subtracted. For roads, the acres of disturbance within each resource CESA is combined for each road type (i.e. U.S. Highways, State Routes, etc.). For mineral development and exploration, the acres of disturbance for each individual action is displayed in Table 5.1-3.

5.2 Past Actions

5.2.1 Mineral Development and Exploration

The acres of disturbance within each resource CESA for past mineral development and exploration are presented in Table 5.1-3. If a past action has been reclaimed, it is not included in Table 5.1-3 as a disturbance. A brief summary of each mineral development and exploration past action is presented below.

Victoria Mine Project

The Victoria Mine Project is an inactive copper mine directly east of the Dolly Varden Mountains. Several companies have conducted exploration operations in the area of the mine over the last 10 years including Hecla Mining Company and Cons Gold Win Ventures, Inc. Approximately 15 acres of disturbance are associated with the mine that have not been reclaimed or revegetated (BLM, 2013a).

Cocomongo Project

The Cocomongo Project is a mineral exploration project located in Egan Canyon and conducted by Earth's Partners LLC. Approximately two acres of disturbance are associated with exploration project. Reclamation is currently pending (BLM, 2013a).

Golden Butte Mine

The Golden Butte Mine is an inactive mine located approximately 45 miles northwest of Ely, Nevada, that consisted of an open pit and heap leach operation. Approximately 150 acres of disturbance were associated with the mine, and approximately 140 acres have been reclaimed (BLM, 2013a).

Sand and Gravel Operations

There are numerous past permitted gravel pits within the CESA boundary that are closed (BLM, 2013a). The CESA maps presented in this chapter do not display these past gravel pits because many of them have been closed for several years, which has allowed for natural revegetation of disturbed areas. Gravel pits that have been subjected to renewed operations are included in the disturbance area for the present or RFFAs in Table 5.1-3.

Notices of Intent

There are approximately 296 closed or expired Notices of Intent (NOIs) within the CESA boundaries (BLM, 2013a). Up to five acres of disturbance may occur under a NOI, though actual disturbance could be less in many cases. Past disturbance associated with NOIs is presented in Table 5.1-3. Due to the large number of past, present, and reasonably foreseeable future NOIs within the CESA boundaries, NOIs were not displayed on any of the CESA maps presented in this chapter.

5.2.2 Utilities, Infrastructure, and Public Purpose Past Actions

The acres of disturbance within each resource CESA for past utilities, infrastructure, and public purpose are presented in Table 5.1-3.

Sierra Pacific Power Company Falcon to Gonder Power Line

The Sierra Pacific Power Company Falcon to Gonder Transmission Project involved the construction of a 345 kilovolt (kV) power line, generally located between Ely and Dunphy, Nevada. The power line was constructed in 2003. It is approximately 180 miles long, has a construction disturbance width of 160 feet, and consists of H-frame towers (BLM, 2001a). A small portion (approximately 310 acres) of the Falcon to Gonder Power Line crosses the southern portion of the antelope CESA.

Other Power Lines, Telephone and Fiber Optic Lines and Communication Sites

There are numerous rights-of-ways (ROWs) for overhead transmission lines, underground/overhead telephone lines and fiber optic lines and communication sites within the CESA boundaries (BLM, 2013a). Since there are numerous facilities within the CESA boundaries, disturbance associated with these facilities was not broken up by specific transmission line, telephone line or fiber optic line project, unless it was a major project (i.e. Falcon to Gonder, etc.). Power lines, fiber optic lines, and communication sites were grouped and analyzed in Table 5.1-3 as “Other Powerlines and Substations” and “Telephone and Fiber Optic Lines and Communication Sites”. Power lines, telephone and fiber optic facilities include the Oreana to Hunt 345 kilovolt line; the Wells to Wendover transmission line (varying voltage); the Wells to Elko transmission line (varying voltage); the Upper Salmon to Wells transmission line (varying voltage); the Wells to Silverzone telephone line; and various other transmission and distribution lines and telephone and fiber optic lines located throughout the CESA boundaries. Due to the numerous ROWs for power lines, telephone and fiber optic lines, the ROWs for these facilities were not displayed on the CESA maps. Total estimated acreage of disturbance associated with the various power line, telephone line, fiber optic line and communication site ROWs within each CESA is presented in Table 5.1-3.

Table 5.1-3 Past, Present, and Reasonably Foreseeable Future Actions for the Long Canyon Project Cumulative Effects Study Area (surface disturbance in acres)

Past, Present, and Reasonably Foreseeable Future Actions, Disturbances and Projects	Surface Water, Groundwater, Wetlands and Riparian Resources	Migratory Birds, Small Mammals, Golden Eagle and Air Quality Resources	Wilderness Characteristics	Cultural Resources	Recreation and Land Use	Visual Resources	Mule Deer	Special Status Species Greater Sage-Grouse	Elk	Grazing and Range, and Noxious and Invasive Species	Pronghorn Antelope	Vegetation, Soils, Paleontology, Geology and Minerals
CESA Acres	**653,704**	**923,194**	**63,235**	**455,198**	**5,960,191**	**234,082**	**3,797,521**	**2,563,719**	**3,428,030**	**1,039,527**	**4,284,654**	**37,207**
Past Actions												
Mineral Development and Exploration Past Actions												
Victoria Mine	NA[1]	NA	NA	NA	15	NA	NA	15	15	NA	15	NA
Cocomongo Project	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2	NA
Golden Butte Mine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10	NA
Sand and Gravel Operations, Materials Sites and Community Sand and Gravel Pits	53	76	1	50	1,082	18	1,809	398	696	106	1,070	16
Notice of Intents	165	235	40	165	1,440	50	840	650	990	320	1,480	25
Utilities, Infrastructure and Public Purpose Past Actions												
Telephone and Fiber Optic Lines and Communication Sites	124	142	46	261	1,667	111	2,913	541	1,248	407	1,739	9
Falcon to Gonder 345kV Transmission Line Project	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	310	NA
Other Powerlines and Substations	215	385	NA	388	5,249	220	3,493	1,541	2,885	529	3,833	28
Ruby Pipeline Project	3	37	NA	42	133	13	563	133	133	121	133	3
Water/Sewer Pipelines and Water Tanks	72	113	NA	26	554	72	366	248	248	122	304	21
West Wendover Sewage Treatment Facility	NA	NA	NA	NA	200	NA	NA	200	200	NA	200	NA
Jackpot Sewage Treatment Facility	NA	NA	NA	NA	147	NA	147	147	147	NA	147	NA
Wells Sewage Treatment Facility	NA	NA	NA	NA	197	NA	197	NA	NA	NA	NA	NA
Jackpot Airport (Hayden Field)	NA	NA	NA	NA	320	NA	320	320	320	NA	320	NA
White Pine County (Yelland Field, Ely) Airport	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	800	NA

[1] An NA (Not Applicable) in Table 5.1-3 designates that no surface disturbance occurs within the respective CESA from the past, present, or reasonably foreseeable future action.

Past, Present, and Reasonably Foreseeable Future Actions, Disturbances and Projects	Surface Water, Groundwater, Wetlands and Riparian Resources	Migratory Birds, Small Mammals, Golden Eagle and Air Quality Resources	Wilderness Characteristics	Cultural Resources	Recreation and Land Use	Visual Resources	Mule Deer	Special Status Species Greater Sage-Grouse	Elk	Grazing and Range, and Noxious and Invasive Species	Pronghorn Antelope	Vegetation, Soils, Paleontology, Geology and Minerals
CESA Acres	**653,704**	**923,194**	**63,235**	**455,198**	**5,960,191**	**234,082**	**3,797,521**	**2,563,719**	**3,428,030**	**1,039,527**	**4,284,654**	**37,207**
Wells Airport (Harriet Field)	NA	NA	NA	NA	198	NA	198	NA	198	NA	198	NA
West Wendover City Class II Solid Waste Disposal Site	NA	NA	NA	NA	88	NA	NA	88	88	NA	88	NA
Jackpot Sanitary Landfill	NA	NA	NA	NA	57	NA	57	57	57	NA	57	NA
City of Ely Class I Landfill	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	40	NA
Railroads	495	630	NA	257	1,940	402	1,401	945	1,246	480	1,765	53
West Wendover Maintenance Station and Access Road	NA	NA	NA	NA	15	NA	15	15	15	NA	15	NA
Range Improvements (Fences, Cattle Guards, etc.)	2	13	NA	18	90	24	154	45	29	47	49	NA
Roads Past Actions												
Interstate Highway	1,648	1,648	145	1,552	7,079	1,358	5,964	3,588	5,091	2,521	5,673	97
U.S. Highways	36	36	NA	NA	2,352	NA	824	970	1,758	NA	2,255	NA
State Routes	195	297	NA	297	857	212	636	297	221	204	373	195
Local/County Roads	224	333	4	230	3,030	194	254	1,327	1,255	455	1,588	127
BLM Roads	1,618	2,170	97	903	12,672	455	6,097	6,055	8,867	2,127	9,394	48
USFS Roads	NA	NA	NA	NA	347	NA	247	NA	NA	NA	NA	NA
Other Roads	10	19	NA	22	55	238	179	90	121	29	4,941	5
Wild land Fires, Restoration and Seeding Past Actions												
Wildland Fires	1,714	17,813	1,923	18,555	845,370	1,620	800,728	323,019	420,741	52,603	430,698	435
Past Actions Total Disturbance Acres	**6,574**	**23,947**	**2,256**	**22,766**	**885,154**	**4,987**	**827,402**	**340,689**	**446,569**	**60,071**	**467,497**	**1,062**
Present Actions												
Mineral Development and Exploration Present Actions												
Graymont Pilot Peak Mine	NA	NA	NA	NA	535	NA	NA	535	535	NA	535	NA
Kinsley Exploration Project	NA	NA	NA	NA	71	NA	NA	71	71	NA	71	NA
West Pequop Exploration Project	400	400	400	400	400	NA	400	400	400	400	400	NA
Long Canyon Exploration Project	114	114	114	114	114	114	114	114	114	114	114	114
Indian Springs	NA	100	NA	100	100	NA	NA	100	100	100	100	NA

Past, Present, and Reasonably Foreseeable Future Actions, Disturbances and Projects	Surface Water, Groundwater, Wetlands and Riparian Resources	Migratory Birds, Small Mammals, Golden Eagle and Air Quality Resources	Wilderness Characteristics	Cultural Resources	Recreation and Land Use	Visual Resources	Mule Deer	Special Status Species Greater Sage-Grouse	Elk	Grazing and Range, and Noxious and Invasive Species	Pronghorn Antelope	Vegetation, Soils, Paleontology, Geology and Minerals
CESA Acres	**653,704**	**923,194**	**63,235**	**455,198**	**5,960,191**	**234,082**	**3,797,521**	**2,563,719**	**3,428,030**	**1,039,527**	**4,284,654**	**37,207**
Exploration Project												
Limo Butte	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	89	NA
Maverick Springs Exploration Project	NA	NA	NA	NA	14	NA	NA	NA	NA	NA	NA	NA
Big Ledge Barite Mining Operation	NA	NA	NA	NA	50	NA	50	NA	NA	NA	NA	NA
NOIs	25	40	30	45	135	20	80	75	115	70	160	10
Sand and Gravel Operations, Materials Sites and Community Sand and Gravel Pits	980	1,020	120	514	3,252	940	3,252	1,318	2,236	1,023	2,825	139
Utilities, Infrastructure and Public Purpose Present Actions												
ON Line/Southwest Intertie Transmission Line Project	1,503	1,503	NA	412	3,394	824	2,085	1,867	2,964	872	4,511	15
Ferguson Springs Maintenance Station	NA	NA	NA	NA	16	NA	NA	16	16	NA	16	NA
Ruby Valley Maintenance Station	NA	NA	NA	NA	10	NA	10	NA	NA	NA	NA	NA
State of Nevada Wells Conservation Camp	NA	NA	NA	NA	40	NA	10	NA	40	40	40	NA
Nevada Ely State Prison	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	640	NA
Oil, Gas and Geothermal Development Present Actions												
Oil Gas and Geothermal Development[2]	12	18	NA	9	147	12	123	48	60	12	66	NA
Urban Development Present Actions												
City of West Wendover (Including Toana Vista Golf Course)	NA	NA	NA	NA	1,013	NA	NA	1,013	1,013	NA	1,013	NA
Currie, NV	NA	NA	NA	NA	41	NA	NA	41	41	NA	41	NA
Pilot Valley, NV	NA	NA	NA	NA	190	NA	77	648	190	648	648	NA
Montello, NV	67	67	NA	67	67	67	42	67	67	67	67	67
Jackpot, NV (including Jackpot Golf Course)	NA	NA	NA	NA	826	NA	826	733	733	NA	733	NA

[2] *Oil, Gas and Geothermal Development disturbance acres are based on three acres of surface disturbance for each well site.

Past, Present, and Reasonably Foreseeable Future Actions, Disturbances and Projects	Surface Water, Groundwater, Wetlands and Riparian Resources	Migratory Birds, Small Mammals, Golden Eagle and Air Quality Resources	Wilderness Characteristics	Cultural Resources	Recreation and Land Use	Visual Resources	Mule Deer	Special Status Species Greater Sage-Grouse	Elk	Grazing and Range, and Noxious and Invasive Species	Pronghorn Antelope	Vegetation, Soils, Paleontology, Geology and Minerals
CESA Acres	**653,704**	**923,194**	**63,235**	**455,198**	**5,960,191**	**234,082**	**3,797,521**	**2,563,719**	**3,428,030**	**1,039,527**	**4,284,654**	**37,207**
San Jacinto, NV	NA	NA	NA	NA	20	NA	20	20	20	NA	20	NA
McGill, NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	46	NA
City of Ely (Including Cross Timbers)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,589	NA
City of Elko (Including Golf Course)	NA	NA	NA	NA	NA	NA	1,400	NA	NA	NA	NA	NA
City of Wells	NA	NA	NA	NA	730	NA	319	NA	226	NA	226	NA
Cherry Creek, NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	73	NA
Schellbourne Station	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12	NA
Recreation Present Actions												
West Wendover Equestrian Park	NA	NA	NA	NA	142	NA	NA	142	142	NA	142	NA
Hawkwatch International Research Project	NA	NA	NA	NA	6	NA	NA	6	6	NA	6	NA
Leppy Hills Trail System	NA	NA	NA	NA	34	NA	34	34	34	NA	34	NA
Present Actions Total Disturbance Acres	**3,101**	**3,262**	**664**	**1,661**	**11,347**	**1,977**	**8,842**	**7,248**	**9,123**	**3,346**	**14,217**	**345**
Reasonably Foreseeable Future Actions												
Mineral Development and Exploration Reasonably Foreseeable Future Actions												
Graymont Pilot Peak Mine	NA	NA	NA	NA	486	NA	NA	486	486	NA	486	NA
Victoria Mine	NA	NA	NA	NA	23	NA	NA	23	23	NA	23	NA
Angel Wing Exploration Project	NA	7	NA	60	60	NA	NA	60	60	60	60	NA
Big Ledge Mine Exploration Project	NA	NA	NA	NA	140	NA	140	NA	NA	NA	NA	NA
Kinsley Exploration Project	NA	NA	NA	NA	21	NA	NA	21	21	NA	21	NA
NOI	10	20	10	20	50	10	25	35	45	35	50	10
Sand and Gravel Operations, Materials Sites and Community Sand and Gravel Pits	150	150	NA	150	346	150	181	230	341	180	374	150
Utilities, Infrastructure and Public Purpose Reasonably Foreseeable Future Actions												
Telephone and Fiber Optic Lines and Communication Sites	NA	NA	NA	NA	18	NA	20	18	18	NA	18	NA

Past, Present, and Reasonably Foreseeable Future Actions, Disturbances and Projects	Surface Water, Groundwater, Wetlands and Riparian Resources	Migratory Birds, Small Mammals, Golden Eagle and Air Quality Resources	Wilderness Characteristics	Cultural Resources	Recreation and Land Use	Visual Resources	Mule Deer	Special Status Species Greater Sage-Grouse	Elk	Grazing and Range, and Noxious and Invasive Species	Pronghorn Antelope	Vegetation, Soils, Paleontology, Geology and Minerals
CESA Acres	**653,704**	**923,194**	**63,235**	**455,198**	**5,960,191**	**234,082**	**3,797,521**	**2,563,719**	**3,428,030**	**1,039,527**	**4,284,654**	**37,207**
Other Powerlines	58	58	NA	NA	67	NA	NA	67	60	NA	60	NA
Zephyr Power Transmission 500kV DC Transmission Line (Wind Energy)	NA	NA	NA	NA	10	NA	NA	10	10	NA	10	NA
Wells Construction and Demolition Landfill	NA	NA	NA	NA	5	NA	5	NA	5	NA	5	NA
Range Improvements	NA	NA	NA	NA	23	NA	10	13	13	NA	13	NA
Oil and Gas Development												
Mary's River Project	NA	NA	NA	NA	445	NA	445	NA	NA	NA	NA	NA
Roads Future Reasonably Foreseeable Future Actions												
ICI Cattle and Timber Company, LLC	NA	NA	NA	NA	24	NA	NA	NA	24	24	24	NA
Misc. Road ROW	NA	NA	NA	NA	73	NA	175	NA	2	1	2	NA
Urban Development Reasonably Foreseeable Future Actions												
Port of West Wendover	NA	NA	NA	NA	3,000	NA	NA	3,000	3,000	NA	3,000	NA
Wendover Project, LLC	NA	NA	NA	NA	675	NA	NA	675	675	NA	675	NA
Recreation and Conservation Reasonably Foreseeable Future Actions												
Wells Golf Course Expansion	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA	NA
Bluebell/Goshute Water Improvement Project	0.6	0.6	NA	NA	0.6	NA	NA	0.6	0.6	NA	0.6	NA
Wild Horse Eco Sanctuary	284,287	284,287	NA	NA	522,000	2,903	5,249	399,568	499,607	NA	499,607	NA
Reasonably Foreseeable Future Actions Total Disturbance Acres	**284,506**	**284,523**	**10**	**230**	**527,547**	**3,063**	**6,250**	**404,207**	**504,391**	**300**	**504,429**	**160**
Past, Present, and Reasonably Foreseeable Future Actions Total Disturbance Acres	**294,181**	**311,732**	**2,930**	**24,657**	**1,424,048**	**10,027**	**842,494**	**752,144**	**960,083**	**63,717**	**986,143**	**1,567**

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Ruby Pipeline Project

The Ruby Pipeline Project consisted of the construction and operation of approximately 678 miles of natural gas pipeline beginning near Opal, Wyoming, through northern Utah and northern Nevada and terminating near Mailin, Oregon (BLM, 2010). The project included a total of 160,500 horsepower of new compression and appurtenant facilities, such as valves, meter stations, and pig launchers/receivers (FERC, 2010). The ROW width is approximately 50 feet. The acres of disturbance within each CESA are shown in Table 5.1-3. The proposed pipeline for the Proposed Action and the North Facilities Alternative would connect to the Ruby Pipeline.

Water and Sewer Pipelines and Associated Infrastructure

Numerous ROWs for water and sewer pipelines are located within the CESA boundaries. These ROWs include irrigation facilities and other water supply and sewer facilities. Besides water tanks, most water and sewer pipelines were buried and actual remaining disturbance would be very low due to natural reclamation. Estimated disturbance for water and sewer pipelines within each CESA is detailed in Table 5.1-3.

5.2.3 Sewage Treatment Plants, Airports, and Maintenance Stations

Past action disturbance acres for the airports, landfills, and sewage treatment facilities discussed below are included in past actions since the disturbance has occurred in the past. However, all airports, sewage treatment facilities, and landfills are still currently operating.

West Wendover Sewage Treatment Facility

The West Wendover Sewage Treatment Facility is located approximately one mile south of West Wendover, Nevada. Approximately 200 acres of disturbance are permitted for facility operations (BLM, 2013a). Estimated disturbance for the West Wendover Sewage Treatment Facility within each CESA boundary is detailed in Table 5.1-3.

Jackpot Sewage Treatment Facility

The Jackpot Sewage Treatment Facility is located approximately 2,266 feet east of Jackpot, Nevada. Approximately 147 acres of disturbance are permitted for facility operations (BLM, 2013a). Estimated disturbance for the Jackpot Sewage Treatment Facility within each CESA boundary is detailed in Table 5.1-3.

Wells Sewage Treatment Facility

The Wells Sewage Treatment Facility is located approximately two miles northwest of Wells, Nevada. Approximately 197 acres of disturbance are permitted for facility operations (BLM, 2013a). Estimated disturbance for the Wells Sewage Treatment Facility within each CESA boundary is detailed in Table 5.1-3.

Jackpot Airport (Hayden Field)

The Jackpot Airport has a runway length of approximately 6,820 feet (USDA, 2013). Approximately 320 acres of disturbance are associated with the Jackpot Airport facility (BLM, 2013a).

White Pine County Airport (Yelland Field, Ely)

The White Pine County Airport has two runways with approximate lengths of 6,000 feet and 4,800 feet (USDA, 2013). Approximately 800 acres of disturbance are associated with the White Pine County Airport facility (USDA, 2013).

Wells Airport (Harriet Field)

The Wells Airport (Harriet Field) has one improved runway with an approximate length of 5,568 feet (USDA, 2013). Approximately 198 acres of disturbance are associated with the Wells Airport (BLM, 2013a).

West Wendover City Class II Solid Waste Disposal Site

The City of West Wendover operates a Class II landfill. The operation includes a residential composting facility (NDEP, 2013). Approximately 88 acres of disturbance are associated with the facility.

Jackpot Sanitary Landfill

The Jackpot Sanitary Landfill is located approximately one mile east of Jackpot, Nevada. Approximately 57 acres of disturbance are associated with the Jackpot Sanitary Landfill (BLM, 2013a).

City of Ely Class I Landfill

The City of Ely landfill is located approximately one mile north of Ely, Nevada. The City of Ely operates a Class I municipal solid waste site and Class III construction and demolition debris landfill. Approximately 40 acres of disturbance are associated with the City of Ely Landfill (USDA, 2013).

West Wendover Maintenance Station

The Nevada Department of Transportation (NDOT) operates the West Wendover Maintenance Station. The West Wendover Maintenance Station is located north of Interstate 80 (I-80), and approximately 700 feet north of West Wendover. Approximately 15 acres of disturbance are associated with the West Wendover Maintenance Station (BLM, 2013a).

5.2.4 Railroads

The railroad disturbance within the CESA boundaries is discussed below. Table 5.1-3 displays the total acres for past action disturbance associated with railroads.

Nevada Northern Railroad

The Nevada Northern Railroad runs north to south and is generally parallel to U.S. Highway 93. Total construction width disturbance is approximately 40 feet (BLM, 2001a).

Union Pacific Railroad

The Union Pacific Railroad is generally parallel to I-80, generally running east to west. Total construction width disturbance is approximately 40 feet (BLM, 2001a).

5.2.5 Range Improvements

Range Improvements

There are various range improvements throughout the CESA boundaries, which include fencing and cattle guards. Disturbance from the range improvements within each CESA boundary is detailed in Table 5.1-3.

5.2.6 Roads

Table 5.2-1 displays miles of roads within each resource CESA. Acres of roads within each resource CESA are displayed in Table 5.1-3.

Table 5.2-1 Roads Past Actions

Roads	CESA(s)	Approximate Miles within Each CESA
I-80, Approximate 400-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	34
	Migratory Birds and Small Mammals and Air Quality Resources	34
	Wilderness	3
	Cultural Resources	32
	Recreation and Land Use	146
	Visual Resources	28
	Mule Deer	123
	Special Status Species Greater Sage-Grouse	74
	Elk	105
	Grazing and Range, and Noxious and Invasive Species	52
	Pronghorn Antelope	117
	Vegetation, Soils, Paleontology, Geology and Minerals	2
	Socioeconomics and Environmental Justice	266
	Transportation and Solid and Hazardous Waste	254
U.S. Highways, Approximate 100-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	3
	Migratory Birds and Small Mammals and Air Quality Resources	3
	Wilderness	NA
	Cultural Resources	NA
	Recreation and Land Use	194
	Visual Resources	NA
	Mule Deer	68
	Special Status Species Greater Sage-Grouse	80
	Elk	145
	Grazing and Range, and Noxious and Invasive Species	NA
	Pronghorn Antelope	186
	Vegetation, Soils, Paleontology, Geology and Minerals	NA
	Socioeconomics and Environmental Justice	196
	Transportation and Solid and Hazardous Waste	0.13

Roads	CESA(s)	Approximate Miles within Each CESA
State Routes, Approximate 70-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	23
	Migratory Birds and Small Mammals and Air Quality Resources	35
	Wilderness	NA
	Cultural Resources	35
	Recreation and Land Use	101
	Visual Resources	25
	Mule Deer	75
	Special Status Species Greater Sage-Grouse	35
	Elk	26
	Grazing and Range, and Noxious and Invasive Species	24
	Pronghorn Antelope	44
	Vegetation, Soils, Paleontology, Geology and Minerals	23
	Socioeconomics and Environmental Justice	367
	Transportation and Solid and Hazardous Waste	27
Local/County Roads, Approximate 50-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	37
	Migratory Birds and Small Mammals and Air Quality Resources	55
	Wilderness	0.73
	Cultural Resources	38
	Recreation and Land Use	500
	Visual Resources	32
	Mule Deer	419
	Special Status Species Greater Sage-Grouse	219
	Elk	207
	Grazing and Range, and Noxious and Invasive Species	75
	Pronghorn Antelope	262
	Vegetation, Soils, Paleontology, Geology and Minerals	21
	Socioeconomics and Environmental Justice	989
	Transportation and Solid and Hazardous Waste	22
BLM Roads, Approximate 50-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	267
	Migratory Birds and Small Mammals and Air Quality Resources	358
	Wilderness	16
	Cultural Resources	149
	Recreation and Land Use	2,091
	Visual Resources	75
	Mule Deer	1,006
	Special Status Species Greater Sage-Grouse	999
	Elk	1,463
	Grazing and Range, and Noxious and Invasive Species	351
	Pronghorn Antelope	1,550
	Vegetation, Soils, Paleontology, Geology and Minerals	8
	Socioeconomics and Environmental Justice	3,745
	Transportation and Solid and Hazardous Waste	9

Roads	CESA(s)	Approximate Miles within Each CESA
USFS Roads, Approximate 20-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	NA
	Migratory Birds and Small Mammals and Air Quality Resources	NA
	Wilderness	NA
	Cultural Resources	NA
	Recreation and Land Use	143
	Visual Resources	NA
	Mule Deer	102
	Special Status Species Greater Sage-Grouse	NA
	Elk	0.03
	Grazing and Range, and Noxious and Invasive Species	NA
	Pronghorn Antelope	0.03
	Vegetation, Soils, Paleontology, Geology and Minerals	NA
	Socioeconomics and Environmental Justice	371
	Transportation and Solid and Hazardous Waste	0.05
Other Roads, Approximate 20-foot ROW	Surface Water, Groundwater, Wetlands and Riparian Resources	4
	Migratory Birds and Small Mammals and Air Quality Resources	8
	Wilderness	NA
	Cultural Resources	9
	Recreation and Land Use	98
	Visual Resources	5
	Mule Deer	74
	Special Status Species Greater Sage-Grouse	37
	Elk	50
	Grazing and Range, and Noxious and Invasive Species	12
	Pronghorn Antelope	2,038
	Vegetation, Soils, Paleontology, Geology and Minerals	2
	Socioeconomics and Environmental Justice	716
	Transportation and Solid and Hazardous Waste	9

NA = Designates that approximate miles within a CESA are not applicable since no miles of road occur within the respective CESA.

5.2.7 Recreation

Wilderness Study Areas and Wilderness Areas

Recreation areas presented in Table 5.2-2 are not necessarily considered disturbance areas but are necessary to analyze cumulative impacts. Since there is no disturbance associated with Wilderness Study Areas (WSAs) and Wilderness Areas, no disturbance acreage was presented in Table 5.1-3. The acreages of the WSAs and Wilderness Areas were determined by the farthest reaching CESA boundaries and are not divided by individual CESA boundary. There are approximately 1,167,937 acres of WSAs and 59,281 acres of Wilderness Areas within the overall CESA boundaries.

Table 5.2-2 Wilderness Study Areas and Wilderness Areas

WSAs and Wilderness Areas	Total Acres Within Overall CESA Boundaries
Bluebell WSA	54,413
Goshute Peak WSA	70,138
Goshute Canyon WSA	339
South Pequop WSA	40,258
Bad Lands WSA	9,277
Rough Hills WSA	6,501
Cedar Ridge WSA	9,452
Little Humboldt River WSA	41,206
North Fork of the Little Humboldt River WSA	120
Owyhee Canyon WSA	21,484
Red Spring WSA	7,571
South Fork Owyhee River WSA	7,839
Bristlecone Wilderness Area	14,095
Goshute Canyon Wilderness Area	42,543

5.2.8 Wildland Fires

Wildland Fires

Several wildland fires have occurred within the overall CESA boundary between 1999 and 2008 (Figure 5.2-1). The total acres of past fires for each CESA are presented in Table 5.1-3. Revegetation treatments typically consist of seeding native species and treating noxious weeds to minimize infestations.

5.3 Present Actions

5.3.1 Mineral Development and Exploration

This section includes current mining projects, NOIs, and sand and gravel operations. The acres of disturbance within each resource CESA for present mineral development and exploration are presented in Table 5.1-3. Below provides a brief summary for each mineral development and exploration present action.

Graymont Pilot Peak Mine

The Pilot Peak Mine is an active mine located in Elko County, Nevada, approximately 10 miles northwest of West Wendover. The Pilot Peak Mine primarily produces lime and is operated by Graymont Western U.S., Inc. (Graymont, 2013). Approximately 535 acres of disturbance are associated with the project (USDA, 2013).

Figure 5.2-1 Wild Fire Activity

Kinsley Exploration Project

The Kinsley Exploration Project is located in the Kinsley Mountain Range, approximately 38 miles south of West Wendover, Nevada, in Elko County. The Kinsley Exploration Project is operated by Pilot Gold (USA), Inc. Existing exploration operations include overland travel; gravel extraction, road construction, including waterbars, drill pad and sump construction; installation of water production well, and exploration drilling. Approximately 71 acres of disturbance are associated with the project (BLM, 2013f).

West Pequop Exploration Project

The West Pequop Exploration Project is located within the western Pequop Mountains, in Elko County, Nevada, approximately 20 miles east-southeast of the city of Wells, Nevada. West Pequop Project, LLC is the operator of the site, and the project boundary consists of approximately 11,967 acres of public and private land. The total permitted surface disturbance is 400 acres on public land over a period of 10 years (BLM, 2012f). Surface disturbance would include drill roads, drill pads, exploration drill holes, a laydown yard, exploration trenches, and monitoring wells (BLM, 2011a).

Long Canyon Exploration Project

The Long Canyon Exploration Project is located in Elko County, Nevada, and operated by Newmont. Active exploration drilling has been authorized by BLM, and includes road construction, drill sites, overland travel, and staging areas (BLM, 2011d). Approximately 114 acres of existing and authorized disturbance are associated with the project (BLM, 2013a).

Indian Springs Exploration Project

Indian Springs Exploration Project is located in Elko County, Nevada, east of the Delano Mountains and is controlled by Galway Resources U.S., Inc. The project is a tungsten exploration operation, and approximately 100 acres of disturbance are associated with the project (Galway Gold, 2008; BLM, 2013a).

Limousine Butte

The Limousine Butte Exploration Project is a mineral exploration project located in White Pine County and controlled by U.S. Gold Exploration. The project consists of four authorized notices including Resurrection Ridge, Ticup, Cadillac Valley, and Continental Valley. Twelve acres of the overall disturbance have been reclaimed, and approximately 89 acres of remaining disturbance are associated with the project (BLM, 2008b and 2013a).

Maverick Springs Exploration Project

The Maverick Springs project is located in White Pine County, Nevada. This project is controlled by Allied Nevada Gold Corporation. The property consists of 246 claims with a total project area of approximately 4,920 acres. Approximately 14 acres of disturbance are associated with the project (Allied, 2013; BLM, 2008c).

Big Ledge Barite Mining Operation

The Big Ledge Mine Exploration Project is located approximately 28 miles northwest of Wells, Nevada, and approximately 10 miles west of U.S. Highway 93 in the Snake Range. The Big Ledge Mine was previously mined throughout the 1970s and 1980s (BLM, 2006b). The current operation is controlled by National Oilwell Varco. Approximately 50 acres of disturbance are associated with the project (BLM, 2007a).

Notices of Intent

There are approximately 35 authorized NOIs within the overall CESA boundary. Up to five acres of disturbance may occur under a NOI, though actual disturbance could be less in many cases. Table 5.1-3 displays the approximate acres within each CESA boundary. Due to the large number of NOIs, no NOIs are displayed on the CESA maps.

Sand and Gravel Operations, Materials Sites and Community Sand and Gravel Pits

There are numerous sand and gravel operations within the overall CESA boundary. Approximate disturbance associated with the sand and gravel operations are provided in Table 5.1-3. Due to the large number of sand and gravel operations within the overall CESA boundary, no sand and gravel pits are displayed on the CESA maps.

5.3.2 Utilities Infrastructure and Public Purpose

ON Line (One Nevada Transmission Line) Project

The One Nevada Transmission Line Project (ON Line Project) represents a joint project between Sierra Pacific Power Company and Nevada Power Company (collectively d/b/a NV Energy) and Great Basin Transmission South, LLC. The 236-mile transmission line extend between the newly constructed Robinson Summit substation at the northern terminus (approximately 18 miles northwest of Ely, Nevada) and the existing Harry Allen substation at the southern terminus (just north of Las Vegas). In addition, a loop-in of the existing Falcon to Gonder 345 kV transmission line at Robinson Summit substation will be constructed and new equipment will be installed at the existing Harry Allen substation near Las Vegas. The project will also include a fiber optic cable interconnection on one of the 345 kV interconnection transmission lines and approximately 1.5 miles of new underground fiber optic line plowed in and buried along U.S. Highway 50. The disturbance associated with the ON Line Project within each CESA is detailed in Table 5.1-3.

Ferguson Springs Maintenance Station

The Ferguson Springs Maintenance Station is also known as Ferguson Maintenance Station. It is located south of West Wendover, in Elko County, Nevada. This station was formerly a highway maintenance station, and is now a Brownfields Site under Targeted Brownfields Assessments RFO #26 (EPA, 2007). The acres of disturbance within each CESA boundary are detailed in Table 5.1-3.

Ruby Valley Maintenance Station

The Ruby Valley Maintenance Station is located southeast of Elko, in Elko County, Nevada, and is operated by NDOT. The most recent NDOT project involving the Ruby Valley Maintenance

Station was during fiscal year 2012 (NDOT, 2012). The disturbance associated with the Ruby Valley Maintenance Station is detailed in Table 5.1-3.

State of Nevada Wells Conservation Camp

The State of Nevada Wells Conservation Camp is located approximately 14 miles east of Wells, Nevada, in Elko County. The State of Nevada Wells Conservation Camp houses minimum custody inmates for the State of Nevada Department of Corrections. The Wells Conservation Camp operates under a cooperative partnership with the Nevada Division of Forestry (NDF). NDF operates numerous inmate work crews providing wildland firefighting support as well as working on a variety of projects locally including wildland conservation, community projects, senior citizen assistance, and highway beautification and cleanup projects (NDOC, 2013a). The disturbance associated with the State of Nevada Wells Conservation Camp is detailed in Table 5.1-3.

Nevada Ely State Prison

The Nevada Ely State Prison was opened in July 1989 and is the designated maximum-security prison for the State of Nevada. The facility is located approximately nine miles north of Ely, Nevada, in White Pine County. The capacity is currently 1,150 inmates. Prison Industries at this facility primarily consist of highly trained drapery craftsmen (NDOC, 2013b). Disturbance associated with the Nevada Ely State Prison are detailed in Table 5.1-3.

5.3.3 Oil, Gas, and Geothermal Development

Table 5.1-3 displays the combined total acres for present disturbance of oil, gas, and geothermal development and is discussed below. Disturbance associated with oil, gas and geothermal development was calculated from the primary producing oil and gas wells or plugged and abandoned wells, and geothermal wells within the CESA boundary. Typical oil and gas and geothermal exploration activities result in approximately three acres of surface disturbance for each well site. Three acres of surface disturbance for each well site was used to determine acres of disturbance within each CESA boundary for Table 5.1-3.

Oil and Gas Wells

There are approximately 43 drilled oil and gas wells, or wells associated with oil and gas production (i.e., injection wells, water wells, and water disposal wells) within the CESA boundaries, with one producing oil and gas well (NBMG, 2011).

Geothermal Wells and Development

There are approximately 10 warm wells and permitted geothermal wells within the CESAs (NBMG, 2012). The breakdown of disturbance for geothermal well development within each CESA was included with Oil and Gas Development disturbance and is shown in Table 5.1-3.

5.3.4 Urban Development

City of West Wendover (Including Toano Vista Golf Course)

The City of West Wendover is located on the eastern border of Nevada and Utah, in Elko County. Disturbance associated with West Wendover is detailed in Table 5.1-3.

Currie

Currie is a small, unincorporated community in Elko County, Nevada, located along U.S. Highway 93 approximately 60 miles south of Wells, Nevada. Disturbance associated with Currie, Nevada, is detailed in Table 5.1-3.

Pilot Valley

Pilot Valley is a small, rural community located in eastern Elko County north of I-80 and east of State Route 233 near the border of Nevada and Utah, approximately 25 miles north of West Wendover, Nevada. The disturbance associated with Pilot Valley is detailed in Table 5.1-3.

Montello

Montello is an unincorporated community in Elko County, Nevada, located along State Route 233 approximately 22 miles north of the Oasis interchange. The disturbance associated with Montello is detailed in Table 5.1-3.

Jackpot (Including Jackpot Golf Course)

Jackpot is an unincorporated town located in Elko County, Nevada, approximately one mile from the Nevada-Idaho border, and approximately 45 miles south of Twin Falls, Idaho. The community of Jackpot includes an 18-hole golf course. Disturbance associated with Jackpot is detailed in Table 5.1-3.

San Jacinto

San Jacinto is an unincorporated community located south of Jackpot, Nevada, in Elko County. Disturbance associated with San Jacinto is detailed in Table 5.1-3.

McGill

McGill is located in White Pine County, Nevada, approximately 12 miles north of Ely, Nevada, along U.S. Highway Alternate 93. Disturbance associated with McGill is detailed in Table 5.1-3.

Ely (Including Cross Timbers subdivision)

Ely is located in White Pine County, Nevada, and is the county seat of White Pine County. For the purposes of this cumulative effects analysis, the Cross Timbers area was analyzed along with the city of Ely. The Cross Timbers subdivision is located west of the Ely airport. Disturbance associated with Ely is detailed in Table 5.1-3.

City of Elko (Including Golf Course)

Elko is a city located in Elko County, Nevada. Elko is the county seat of Elko County. Elko is listed as Nevada Historic Marker 106, with the city being the original location of the University of Nevada, prior to the University's relocation to Reno, Nevada. Elko is home to Great Basin College and the Elko Golf Course (SHPO, 2013a). Disturbance associated with Elko detailed on Table 5.1-3.

City of Wells

Wells is located in Elko County, Nevada, east of Elko at the junction of U.S. Highway 93 and I-80. Humboldt Wells, a spring complex seen as marshy spots, located in Wells, Nevada, is listed as Nevada Historic Marker 45. The Humboldt Wells were a historic watering spot along the California Immigrant Trail (SHPO, 2013b). Disturbance associated with Wells is detailed in Table 5.1-3.

Cherry Creek

Cherry Creek is located in White Pine County, Nevada, in the northern part of the Steptoe Valley. Cherry Creek is listed as Nevada Historic Marker 52 (SHPO, 2013c). The disturbance associated with Cherry Creek is detailed in Table 5.1-3.

Schellbourne Station

Schellbourne Station, located in White Pine County, Nevada, was a Shoshone Indian village site prior to becoming a Pony Express station. In 1859, an Overland Stage and Mail station was built at Schellbourne. In 1860, the Pony Express used the site, with telegraph lines following in 1863. During the mining rush to Virginia City, Schellbourne Station became a stopping point for travelers. Silver ore was found east of Schellbourne Station in the 1870s and in 1871, it became part of the Aurum Mining District. Schellbourne Station is listed as Nevada Historic Marker 51 (SHPO, 2013d; GBNH, 2013). Disturbance associated with Schellbourne Station is detailed in Table 5.1-3.

5.3.5 Recreation

West Wendover Equestrian Park

The West Wendover Equestrian Park is located approximately one mile south of Wendover Boulevard on U.S. Highway Alternate 93 adjacent to the Union Pacific Railroad This park is maintained and operated by the West Wendover Recreation District, a multi-faceted parks and recreation organization providing programs for not only the local community but local tourism as well. The park is home to several rodeos and other equestrian activities annually (Wendover, 2013a). Disturbance associated with the West Wendover Equestrian Park is detailed in Table 5.1-3.

Hawkwatch International Research Project

The Hawkwatch International Research Project in the Goshute Peak WSA is located in the Goshute Mountain range in Elko County, Nevada. This research site is operated by HawkWatch International. Work performed at the site focuses on conserving the environment through education, long-term monitoring, and scientific research on raptors. This site is one of HawkWatch's longest-running Raptor Migration Project sites (HawkWatch, 2013). Disturbance associated with the Hawkwatch International Research site is minimal and detailed in Table 5.1-3.

Leppy Hills Trails

The Leppy Hills Trails system is a non-motorized trail system north of West Wendover and I-80, below Leppy Peak. Phase I of the Leppy Hills Trails system was the purchase of BLM lands

abutting the City of West Wendover for construction and management of the City's trails system (NDSL, 2002). The second phase of the project included the design and securing of ROWs (prior to purchase of the lands) and construction of approximately seven miles of trails. The trails are paved or hard-packed native surface. The project included signage, parking, and restroom facilities (NDSL, 2002).

5.4 Reasonably Foreseeable Future Actions

5.4.1 Mineral Development and Exploration

Graymont Pilot Peak Mine

As stated above, the Graymont Pilot Peak Mine is a lime quarry and processing facility approximately 10 miles northwest of West Wendover. The Graymont Pilot Peak Mine has an existing disturbance of approximately 535 acres (USDA, 2013). The Graymont Pilot Peak Mine has a permitted disturbance area of 1,021 acres (BLM, 2013a). According to the allowed disturbance for the Pilot Peak Mine, approximately 486 additional acres may occur within the Pilot Peak Mine project area.

Victoria Mine

A proposed application by Taylor Western Resources is currently pending to commence active copper mining operations on the Victoria Mine site. Approximately 23 acres of disturbance are proposed on the Victoria Mine site.

Angel Wing Exploration Project

The Angel Wing Exploration Project is located approximately 64 miles north of West Wendover. Miranda USA, Inc. and Ramelius Nevada LLC would be the operators of the exploration project. Currently, Miranda USA, Inc. has been conducting exploration activities under an existing NOI with a disturbance of approximately three acres (Miranda, 2013). Disturbance associated with the existing NOI has been included in Table 5.1-3 as a present action NOI. Exploration activities would occur in phases through an approximate five-year period. Excluding the already authorized three acres of surface disturbance permitted under the existing NOI, the Angel Wing Exploration Project would include approximately 57 acres of surface disturbance for exploration activities including road construction, overland travel, drill sites and road maintenance.

Big Ledge Mine Exploration Project

The Big Ledge Mine Exploration Project is located approximately 28 miles northwest of Wells, Nevada, and approximately 10 miles west of U.S. Highway 93 in the Snake Range. The Big Ledge Mine was previously mined throughout the 1970s and 1980s. The proposed Big Ledge Mine Exploration Project would consist of barite exploration activities, including water well and monitoring well drilling; preparing stockpile areas at a proposed mill site; removing stockpiles of ore; and constructing a segment of haul road to link the existing roads to the Big Ledge mine (BLM, 2006b). The Big Ledge Mine Exploration Project would include approximately 140 acres of surface disturbance (BLM, 2013a).

Kinsley Exploration Project

Pilot Gold (USA), Inc. has submitted an amended Plan of Operations to the BLM for an additional 21 acres of surface disturbance associated with the Kinsley Exploration Project (Wirthlin, 2014). This will increase the disturbance associated with the exploration project to approximately 92 acres.

Notices of Intent

There are approximately 10 pending NOIs within the overall CESA boundary (BLM, 2013a). Up to five acres of disturbance may occur under a NOI, though actual disturbance could be less. Total disturbance within the overall CESA boundary associated with reasonably foreseeable future NOIs would be approximately 50 acres (BLM, 2013a). Table 5.1-3 displays the approximate acres of disturbance by CESA boundary.

Sand and Gravel Operations

There are several pending sand and gravel operations within the CESAs (BLM, 2013a). Approximate disturbance associated with the proposed sand and gravel operations are provided in Table 5.3-1.

5.4.2 Oil, Gas, and Geothermal Development

There are approximately 26 pending oil and gas leases within the overall CESA boundary (BLM, 2013a). Since no actual disturbance is associated with an oil and gas lease until a well is drilled, no disturbance acreage is detailed on Table 5.1-3.

Noble Energy Mary's River Project

Noble Energy, Inc. proposes to conduct an oil and gas exploratory drilling program in the Mary's River project area, which includes drilling, completion, and future abandonment of a maximum of 20 wells on BLM-administered land and private lands located approximately four miles northwest of Wells in Elko County, Nevada. Noble Energy has also identified an additional 16 wells that could be drilled after the initial 20 wells. Drill pads would be approximately five acres in size and approximately 37.8 miles of new or improved access roads would be required.

5.4.3 Utilities Infrastructure and Public Purpose

Telephone and Fiber Optic Lines and Communication Sites

There are two pending applications for telecommunication facilities within the overall CESA boundary. The two applications include approximately 18 acres of surface disturbance within the overall CESA boundary associated with the proposed buried telecommunications facility along Goose Creek Road in Elko County, and approximately two acres of surface disturbance within the overall CESA boundaries associated with the Lone Mountain to Tuscarora and Dinner Station to Adobe Ranchos Fiber Optic Lines project (BLM, 2013a).

Power Lines

There are pending applications for power lines and associated facilities for Raft River Electric Company and Wells Rural Electric Company. Approximately 67 acres of surface disturbance

within the overall CESA boundary would be associated with the pending powerline facility applications.

Zephyr Power Transmission 500kV DC Transmission Line

The Zephyr Power Transmission Project is being developed by Duke American Transmission Company. The proposed project would consist of a 950-mile, 500 kV high voltage DC transmission line that would originate near Chugwater, Wyoming, pass through eastern Nevada, and terminate south of Las Vegas, Nevada, in the Eldorado Valley. The project proposes to deliver the energy from wind energy resources located in Wyoming to energy markets in the Desert Southwest Region, including California, Nevada, and Arizona (NPUC, 2013). Approximately 10 acres of surface disturbance within the overall CESA boundary would result from the Zephyr Power Transmission Project.

Wells Construction and Demolition Landfill

The City of Wells has a pending application for a construction and demolition landfill located approximately two miles east of Wells, Nevada. Approximately five acres of disturbance within the overall CESA boundaries would result from the construction and demolition landfill.

Range Improvements

There are several pending applications for range improvements including cattle guards, fencing, and irrigation pipelines. Approximately 23 acres of surface disturbance within the overall CESA boundary would be associated with the pending range improvements.

5.4.4 Wind Energy Development

There are approximately three pending wind energy development projects within the overall CESA boundaries. Wind development projects often lease large areas of property for the project. However, the actual disturbance is lower compared to the leased acreage. Since the applications are pending, no specific surface disturbance has been proposed for the projects. Due to the fact that actual leased acreage exceeds the actual disturbance area, and the fact that no actual disturbance has been proposed for the projects, the wind development projects are not included in Table 5.1-3. The pending wind energy projects are briefly described below.

Ely Wind Mountain Project

The Ely Wind Mountain Project would be located mainly within White Pine County, with a small portion in southern Elko County. The project would be adjacent to the Antelope Range and Antelope Valley. Total project area would be approximately 14,267 acres. However, actual surface disturbance would be much less. The Ely Wind Mountain Project would consist of a 700 megawatt (MW) facility with 354 wind turbines (BLM, 2013a).

Knoll Mountain Wind Test Project

The Knoll Mountain Wind Test Project would be located in Elko County in the Knoll Mountains. Total project acreage would be 3,338 acres. However, actual surface disturbance would be much less. The Knoll Mountain Wind Test Project would consist of one wind test tower (BLM, 2013a).

5.4.5 Roads

There are several pending applications for road ROWs within the overall CESA boundaries. Total disturbance within each CESA associated with the proposed road ROWs is detailed in Table 5.1-3.

5.4.6 Urban Development

Port of West Wendover

The Port of West Wendover would serve as a primary area for commercial, industrial, and aeronautical development within West Wendover. The Port of West Wendover would include greater coverage of industrial, manufacturing, warehousing, and aeronautical business. The first phase of the project would be a 3,000-acre multi-modal industrial park, which would be located immediately adjacent and west of the existing Wendover Airport runway (Wendover, 2013b).

Wendover Project, LLC

The Wendover Project, LLC would consist of a 75-acre commercial/retail site adjacent to I-80 and an approximately 600-acre, rail-served industrial site near the proposed Port of West Wendover (Wendover, 2013b).

5.4.7 Recreation and Conservation

Wells Golf Course Expansion

The City of Wells has a pending application to expand the Chimney Rock Golf Course. The Chimney Rock Golf Course is approximately 86 acres and this disturbance acreage is included in the City of Wells disturbance acreages in Table 5.1-3. The expansion would permit approximately 80 acres of additional disturbance within the overall CESA boundary.

Bluebell /Goshute Water Improvement Project

The Bluebell/Goshute Water Improvement Project would be located 15 miles southwest of the West Wendover. The project would include construction of temporary pipe rail fences around five degraded springs within the Bluebell and Goshute Peak WSAs to improve wildlife water sources; repair or modification of existing water diversions and troughs to a functional condition; and construction of two water diversions and troughs for wild horse use. The project would result in less than 0.6 acres of disturbance (BLM, 2013h).

Wild Horse Eco Sanctuary

The Wild Horse Eco Sanctuary would create a privately-managed (Saving America's Mustangs), non-reproducing feral horse eco-sanctuary under federal ownership. The proposed project would be located on approximately 14,000 acres of private land and 508,000 acres of public land inside the current Spruce Allotment. The project would improve and maintain fencing and water wells and oversee management of the horses, which would remain under federal ownership. The project would require restructuring three existing horse herd management area boundaries and removing and retiring the portion of the Spruce Grazing Allotment east of U.S. Highway 93 from the N1 grazing district (BLM, 2013h).

5.4.8 Fuelwood Harvest

Fuelwood Harvest

Personal use fuelwood harvest occurs on United States Forest Service (USFS)- and BLM-administered lands throughout the CESAs. Future fuelwood harvesting is expected to continue.

5.5 Water Resources

5.5.1 CESA Boundary

Surface Water and Groundwater

The CESA boundary for surface water and groundwater includes the Goshute Valley hydrographic basin (Basin 187) and a 0.25-mile wide corridor along the pipeline (Figure 5.5-1). The total area of this CESA is 653,704 acres (1,021 square miles). This CESA boundary was chosen because it encompasses all of the Proposed Action and action alternatives disturbance areas and the hydrographic basin in which they occur. This is the area within which other water users could cumulatively interact with the water sources associated with the Proposed Action.

5.5.2 Past and Present Disturbances

Several of the past and present activities listed in Table 5.1-3 occur within the water resources CESA and likely affect the quantity or quality of surface water and/or groundwater. The West Pequop Exploration Project, Long Canyon Exploration Project and the various NOIs and sand and gravel pits within the CESA most likely have used or are currently using water (typically groundwater) as part of their operations, either for dust control or processing. This may affect overall water quantity and quality within the basin. General surface disturbance can cause sediment loading; channel rerouting can cause erosion/sedimentation; and inadvertent spills of process water, drilling fluids, or other hazardous substances can contaminate surface water or shallow groundwater.

The ON-Line/Southwest Intertie Transmission Line Project and the past utility line construction and infrastructure projects within the area may have used water during construction. The largest potential post construction effect is likely related to erosion/sedimentation associated with access roads or unreclaimed disturbances. All roads, including United States, state, local, private and BLM roads, can present water quality impacts due to inadvertent spills or releases during vehicular accidents. Unpaved roads, such as those crossing public lands within the CESA, can also be a source of increased erosion and sedimentation. Paved roads, such as United States, state, and some local roads within the CESA, may cause water quality issues resulting from increased stormwater run-off.

Figure 5.5-1 Surface Water, Groundwater, Wetlands & Riparian Resources CESA

Oil and gas development within the water resources CESA typically uses water, and also has the potential to degrade both surface water and groundwater if drilling fluids are not properly managed, or if wells are not properly developed. New roads are often built in association with oil and gas development, with the same potential consequences as mentioned above. Other activities such as grazing, that are not described in Table 5.1-3 also have potential consequences to water quality and quantity because they use water and involve land disturbance.

Estimates of annual groundwater use within the Goshute Valley include: 2,889.60 acre-feet per year (AFY) for irrigation; 1,655.58 AFY for mining and milling; 5,935 AFY for municipal; 64.08 AFY for quasi-municipal; and 453.25 AFY for stock water. Perennial yield for groundwater within Basin 187 is 11,000 AFY. Currently permitted and certificated rights total 10,997.51 AFY.

The largest water use within the CESA is for municipal purposes. Actual urban development within the CESA is limited and consists primarily of the Oasis area and Montello. Actual surface disturbance from urban development may result in cumulative surface run-off due to an increase in impermeable surfaces. This additional surface run-off may impact water quality within the CESA. Urban development also increases water use within the basin. The largest user of municipal water within the basin is from Wendover, Utah and West Wendover, Nevada (Cities).

The second largest use of water within the basin is for irrigation. Irrigation not only affects the amount of water used within the CESA, but irrigation can affect water quality through return flows that have had contact with agricultural chemicals or that mobilize sediment from cultivated fields. Agricultural chemicals can affect both surface water and groundwater.

Finally, several previous wildland fires may have resulted in channel incision and potentially continue to provide elevated sediment loads to CESA area stream channels. In sum, all of these past and present activities have the potential to affect water resources.

5.5.3 Reasonably Foreseeable Future Disturbances

RFFAs are summarized at the end of Table 5.1-3. They include many of the same types of activities (with the same potential effects) as described in Section 5.5.2. Future activities include various NOIs and sand and gravel operations; and additional power line construction. All these activities would require additional surface disturbance within the CESA. Often the greatest risk to surface water with these types of projects is during and immediately after construction. Generally, the potential impacts to water resources from these RFFAs are the same as described above for the past and present activities.

The proposed Goshute/Bluebell project would create negligible surface disturbance within the CESA, and is proposed to improve water quality within the Goshute/Bluebell WSA. The Wild Horse Eco Sanctuary may degrade surface water from increased wild horse grazing. However, the Wild Horse Eco Sanctuary would be within a portion of the existing Spruce Allotment, which would be retired to accommodate the Eco Sanctuary.

5.5.4 Cumulative Disturbances

A portion of the existing Spruce Allotment would be retired to create the RFFA proposed Wild Horse Eco Sanctuary, which would occupy 284,287 acres. Since grazing is already allowed within that portion of the Spruce Allotment, the impact to water quality would be minimal. The Wild Horse Eco Sanctuary would result in surface disturbance primarily from fencing improvements and construction of new water improvements (e.g. water wells and water pipelines). Since actual surface disturbance associated with the Wild Horse Eco Sanctuary is negligible, the Wild Horse Eco Sanctuary project acreage was not included in the disturbance calculation for past, present, and RFFAs. Of the 653,704 acres in the water resources CESA, 9,894 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 1.5 percent of the CESA.

The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to 14,087 acres, or approximately two percent of the CESA. The Proposed Action amounts to less than one percent disturbance within the CESA. Since it is difficult to quantify impacts to surface water and groundwater resources from agricultural activities in terms of disturbance acreage, agriculture is not included in the above calculations. However, activities associated with agriculture do have the potential to cumulatively affect surface water and groundwater resources within the CESA primarily through runoff from agricultural activities. The acreage disturbed by any one activity or type of activity may not be directly proportional to water impacts because of the different types of links between surface disturbance (e.g. type of activity, soil type, slope) and the potential for elevated erosion rates.

5.5.5 Cumulative Effects

Potential cumulative impacts to surface water resources would be minor. Ground disturbances and/or channel rerouting associated with past, present, and RFFAs, as well as the impacts from the Proposed Action may cause increased erosion and sedimentation, and may transport sediments to surface waters. Groundwater pumping and dewatering are not anticipated, but, if necessary, could potentially result in larger cumulative impacts to surface water flows within the CESA if any significant pit dewatering or pumping of any bedrock aquifer wells is required with the Proposed Action.

Potential cumulative impacts to groundwater could result from changes in availability of groundwater to downgradient water rights holders, changes in volume and timing of discharge from springs that are fed by groundwater, and changes in groundwater quality resulting from surface disturbance activities. The Proposed Action anticipates new production wells installed in the basin fill aquifer, and would use approximately 580 to 5,040 AFY, which represents a range of five to 43.6 percent of current appropriated water rights and 5.3 to 45.8 percent of Nevada Division of Water Resources (NDWR) perennial yield in the Goshute Valley. If these wells and all other water rights were used in the basin at the full rate of their permitted use, water usage in the basin would exceed the amount the basin is capable of supplying. Alternative water supply and associated facilities for the Cities would be provided by Newmont to replace that portion of their current water supply, which comes from Big Springs. With

implementation of the design features and Environmental Protection Measures (EPMs), the potential cumulative impacts to groundwater resources would be negligible to minor.

Cumulative effects to water resources resulting from the North Facilities Alternative would be similar to effects from the Proposed Action, except that all mine facilities other than the mine pit and borrow pits would be located farther from Big Springs and other surface water features which may reduce potential water quality impacts.

Due to the movement of the locations of the mine water supply well(s) further to the south, aquifer drawdowns are expected to be less in proximity to the Project Area and the Johnson Springs system than those predicted for the Proposed Action. The potential cumulative impacts to groundwater and surface water resources from the North Facilities Alternative would be negligible to minor.

5.6 Wetlands and Riparian Resources

The proposed project area is located within the Goshute Valley Watershed (Basin 187) of the Spring-Steptoe Valleys Watershed Basin, which is part of the Central Region Watershed (Hydrographic Region 10) in central Nevada. The Goshute Valley Watershed has been classified as a "designated groundwater basin" with "preferred uses" by NDWR. The State Engineer has designated the Goshute Valley watershed as having preferred use for municipal, quasi-municipal, and domestic use (NDWR, 1984). The area is characterized by several springs and drainages. A total of 389.58 acres of non-jurisdictional wetlands were delineated, and a total of 2.75 acres of non-jurisdictional drainages and associated riparian areas were delineated within proposed project area.

5.6.1 CESA Boundary

The CESA boundary for wetlands and riparian resources includes the Goshute Valley Hydrographic Basin (Basin 187), and a 0.25-mile wide corridor along the pipeline (Figure 5.5-1). The total area of this CESA is 653,704 acres (1,021 square miles). This CESA boundary was chosen because it encompasses all of the Proposed Action and action alternatives disturbance areas and the hydrographic basin in which they occur. This is the area within which wetlands and riparian resources would be cumulatively impacted by the Proposed Action.

5.6.2 Past and Present Actions

Cumulative impacts to riparian and wetland areas may result from past and ongoing surface disturbance from mining exploration operations; grazing by livestock and wildlife; sand and gravel operations; oil and gas development; and utilities, infrastructure and public purpose projects. Livestock and wildlife grazing can impact wetland and riparian areas through trampling and shearing of streambanks, compaction of wetland soils, trampling of plants, and overuse of riparian plant species. Riparian and wetland areas that have been overgrazed are susceptible to invasion by noxious weeds and invasive plant species, which can displace riparian and wetland species over time (BLM, 2012a). Impacts from the above stated present actions include potential increase of run-off into wetlands, groundwater drawdown from groundwater

pumping, and potential reduced flows to streams in the area. It is estimated that the Proposed Action would use approximately 580 to 5,040 AFY of water, which represents a range of five to 43.6 percent of current appropriated water rights and 5.3 to 45.8 percent of NDWR perennial yield in the Goshute Valley.

5.6.3 Reasonably Foreseeable Future Actions

RFFAs within the CESA include mining exploration expansions; new mining exploration projects; proposed sand and gravel operations; utility projects; and recreation and conservation projects (i.e. Bluebell/Goshute Water Improvement Project and Wild Horse Eco Sanctuary). Continued livestock grazing within the area could result in the same impacts as described for present grazing activities. RFFAs would have similar impacts as past and present activities. The Bluebell/Goshute Water Improvement Project has been proposed to reduce present impacts to water resources. The Wild Horse Eco Sanctuary may have additional impacts from additional horse grazing; however, the proposed Eco Sanctuary is within a portion of an existing grazing allotment (Spruce Allotment). That portion of the Spruce Allotment would be retired. The Eco Sanctuary should have negligible cumulative impacts to wetlands and riparian areas since it is already within an existing grazing allotment.

5.6.4 Cumulative Disturbance

Of the 653,704 acres covered by the wetlands and riparian resources CESA, 294,181 acres are associated with past, present, and RFFAs, which is a disturbance of approximately 45 percent of the CESA. However, approximately 284,287 acres are associated with the Wild Horse Eco Sanctuary, which would have negligible actual surface disturbance and negligible cumulative impacts to wetlands and riparian resources. If the Eco Sanctuary is removed from the surface disturbance acreage, there are approximately 9,894 acres of surface disturbance within the wetlands and riparian resources CESA, which is approximately 1.5 percent of the CESA. The Proposed Action would increase the surface disturbance within the CESA by approximately 4,193 acres to approximately 14,087 acres, which would be approximately two percent of the CESA.

5.6.5 Cumulative Effects

The Proposed Action combined with past, present and future actions may cumulatively impact wetlands and riparian resources through removal or disturbance of wetland and riparian communities in the CESA; through the removal of vegetation from upland areas; through potentially altering flow within wetlands and riparian areas in the CESA; through reducing quantity and quality of water received by wetlands and riparian areas within the CESA; and degradation of aquatic habitat or other resources associated with wetlands and riparian areas. Cumulative impacts from the Proposed Action would be reduced by the Best Management Practices (BMPs) and the Stormwater Pollution Prevention Plan (SWPPP) for the Proposed Action, which would prevent any unwanted discharge into wetlands and would help to reduce cumulative run-off impacts and water quality impacts resulting from the Proposed Action. The Proposed Action would avoid surface disturbance to the wetland and riparian areas to avoid any adverse impacts to these resources. It is not anticipated that the proposed pit would intercept the bedrock groundwater aquifer, and current mining plans do not anticipate pit dewatering or

pumping of any bedrock aquifer wells; however, groundwater levels fluctuate and the potential for dewatering at some time cannot be ruled out. Pumping of the new water wells in the alluvial aquifer is predicted to reduce flow in the Johnson Springs system during mining and after mining operations are completed. In the long-term, there may be a minor net loss of wetland area. The predicted decrease in flow would result in less available water for wetlands and some soils would dry out. Potential drying as a result of new groundwater diversions provided by Newmont could lead to long-term moderate to major impacts to riparian/wetland areas within the project area. Overall, cumulative effects of the Proposed Action combined with past, present, and RFFAs would result in minor to major impacts within the CESA.

Under the North Facilities Alternative, all of the mine facilities except the pit and a borrow pit would be relocated to the northeastern quadrant of the project area. This would result in no facilities being positioned on the bedrock aquifer from which Big Springs emanates. The North Facilities Alternative would disturb less ephemeral/intermittent drainages (all designated non-jurisdictional). Other cumulative effects would be similar to the Proposed Action.

5.7 Geology and Minerals

Mining and exploration activities typically have the largest impacts on geology and mineral resources because they contribute to mineral resource depletion, removal of mineral resources from availability for development, topographic changes, and affect geotechnical stability. Other actions with potential effects on geology include sand and gravel extraction operations; utility lines; oil, gas, and geothermal development; roads; and wildland fires. While these activities also disturb surface acreage, they typically conform closely to the local topography and have negligible, if any, impacts on geology and mineral resources. Disturbance associated with utilities, infrastructure, public purpose projects, and wildland fires are not included in the disturbance calculations presented below because the impacts are not directly related to geology.

5.7.1 CESA Boundary

The CESA boundary for geology and mineral resources includes the project area, including Section 21, T35N, R66E and a 0.25-mile wide corridor along the pipeline (Figure 5.7-1). The total area of this CESA is 37,207 acres, and primarily includes BLM and private lands. The CESA boundary was chosen because it encompasses the area where geology and mineral resources would be affected.

5.7.2 Past and Present Disturbance

Past and present mineral development and exploration projects located within the CESA include the existing Long Canyon Exploration Project, which accounts for approximately 114 acres of disturbance. There are approximately 35 acres of disturbance associated with past and present NOIs, and approximately 155 acres of disturbance associated with past and present sand and gravel operations.

Utilities, infrastructure, and public purpose activities account for approximately 129 acres of disturbance within the CESA; roads account for approximately 472 acres of disturbance within the CESA; and urban development accounts for approximately 67 acres. These disturbances are generally limited to surface disturbances, and therefore do not have a significant impact on geology and mineral resources, and are not included in disturbed acreage calculations.

Approximately 435 acres of the CESA has burned in the past, but these fires are surface disturbances and have no impact on geology and minerals; therefore, they are not considered in further analysis on this resource.

5.7.3 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbances within the geology and mineral resources CESA include approximately 150 acres associated with sand and gravel operations and approximately 10 acres associated with NOIs.

5.7.4 Cumulative Disturbances

Of the 37,207 acres covered by the geology and minerals CESA, approximately 464 acres of major past, present, and RFFA disturbances to geology and minerals, as presented above in Sections 5.7.2 and 5.7.3, is known and quantifiable within the CESA, which represents a disturbance of approximately 1.2 percent of the CESA. The Proposed Action would increase the affects to geology and minerals by approximately 4,193 acres to approximately 4,657 acres, or approximately 13 percent of the CESA.

5.7.5 Cumulative Effects

Gold-bearing ore would be removed from Long Canyon area reserves as part of the Proposed Action. This would represent a moderate loss of gold reserves within the overall CESA. Considering past, present, and RFFA disturbances in the geology and mineral resources CESA combined with the Proposed Action, cumulative effects on geology and mineral resources would be a minor to moderate impact when analyzed against the total estimated gold reserves in the CESA.

Cumulative effects from the North Facilities Alternative would be the same as the Proposed Action except with less acres of disturbance within the CESA.

Figure 5.7-1 Vegetation, Soils, Paleontology, & Geology & Minerals CESA

5.8 Soils

The main impact to soils is disturbance of the ground surface, which depends primarily on land use. Primary sources of surface disturbance within the CESA include mining, exploration and NOIs; sand and gravel extraction operations; agriculture; utility lines; roads; and wild land fires. Surface soil disturbance results from all of these actions. Acres of disturbance described in the sections below are summarized in Table 5.3-1.

5.8.1 CESA Boundary

The CESA boundary for soil resources includes the project area, including Section 21, T35N, R66E and a 0.25-mile wide corridor along the pipeline (Figure 5.7-1). The total area of this CESA is 37,207 acres, and primarily includes BLM and private lands. The CESA boundary was chosen because erosion of soils and sedimentation associated with the Proposed Action would be limited to these areas.

5.8.2 Past and Present Disturbance

Past and present mineral development and exploration actions within the CESA include approximately 155 acres associated with sand and gravel operations and approximately 35 acres associated with NOIs. Some of these disturbances have not been actively reclaimed; however, natural reclamation of vegetation species has occurred over time and has resulted in various levels of revegetation, which is important for soil stability and erosion prevention. The Long Canyon Exploration project accounts for approximately 114 acres of disturbance within the CESA. Impacts of past and present mineral development and exploration can be long-term since soil is physically removed and then replaced during reclamation. If an area is not reclaimed, or soils are not salvaged, existing soils may be buried. The primary effect of mining on soil resources is a temporary decrease in overall soil quality, resulting in increased soil erosion, and subsequently, an increase in sediment in downstream surface waters. A decrease in soil quality may also result in decreased productivity for other resources such as vegetation and wildlife. Reclamation of vegetation species and other EPMs outlined in Section 2.2.18 help to prevent these effects.

There are approximately 129 acres of disturbance associated with past utilities, infrastructure and public purpose activities, including the ON-Line/Southwest Intertie Project. Disturbance to soil resources associated with utility and infrastructure projects involves construction of access roads, as well as temporary staging areas, which leads to soil compaction and removal of vegetation.

There are approximately 472 acres of disturbance associated with roads within the CESA. This acreage includes U.S. Highways and I-80; state routes; local/county roads; BLM roads; and roads with no assigned name or ownership. Road construction has a long-term effect on soil resources. Effects from unimproved roads, such as the BLM roads, some local/county roads and roads with no assigned ownership, include compaction of the ground, burial of soils and altering water flow on the soil surface. United States Highways and State Routes are often

paved with asphalt or concrete, which permanently affects the soil in the area and increases run-off from the impermeable surface; this has the potential to increase erosion of adjacent soils.

Livestock grazing, cultivated agriculture, and vegetation treatments have likely impacted soils on private land within the CESA. As described in Section 3.5.3, these activities have resulted in a shift in vegetation communities that may have impacted soil quality. These impacts have not been assessed in detail, but it is estimated that they have occurred on approximately 3,750 acres (10%), within the CESA.

Approximately 435 acres of the CESA (1.2 percent) has previously burned as a result of wildland fire. Vegetation destroyed during wildland fires has the potential to increase the risk of soil erosion. Extremely hot fires have the ability to change the top layers of the soil by altering the soil structure, productivity, chemistry, and hazard of erosion.

Approximately 67 acres of disturbance is associated with urban development (Montello, Nevada). This is a relatively small area of disturbance within the CESA (less than one percent). Urban development permanently affects soil through compaction of the ground, ground disturbance activities, and the increase in impermeable surface (e.g. concrete, asphalt, etc.) which may concentrate runoff and increase the potential for erosion of adjacent soils.

5.8.3 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbances within the CESA include approximately 150 acres of disturbance associated with proposed sand and gravel operations and approximately 10 acres of surface disturbance associated with proposed NOIs. Effects associated with these foreseeable future disturbances would be the same as described with the past and present activities.

5.8.4 Cumulative Disturbances

Of the 37,207 acres covered by the soil resources CESA, approximately 1,567 acres of past, present, and RFFA have occurred, which is a disturbance of approximately 4.2 percent of the CESA. The Proposed Action would increase the surface disturbance within the CESA by approximately 4,193 acres to create a cumulative disturbance of approximately 5,760 acres, or approximately 16 percent of the CESA. The disturbance within the CESA can be categorized as either being dispersed over a large area throughout the CESA, or concentrated in specific locations within the CESA. Disturbance that is dispersed throughout the CESA includes wildland fires, agriculture, and livestock grazing, whereas concentrated disturbance includes roads, utilities and infrastructure, mineral development and exploration operations, and urban development. There are approximately 4,185 acres of dispersed disturbance within the CESA and approximately 1,132 acres of concentrated disturbance within the CESA. The Proposed Action would cumulatively increase the level of concentrated disturbance within the CESA by 4,193 acres.

5.8.5 Cumulative Effects

Effects to soil resources under the Proposed Action would be long-term and minor to moderate due to construction activities and topsoil salvage. Erosion from storm water runoff and land affected by the mine would be controlled with BMPs. All past, present, and RFFAs within the CESA would have, or would most likely require similar BMPs, which would reduce cumulative impacts to soils. Some past activities and reclamation actions may have resulted in loss of soils and long-term soil productivity due to less strict BMP and reclamation measures. Considering past, present, and RFFAs in the soil resources CESA that may affect soils combined with the Proposed Action, cumulative effects to soils would be minor to moderate depending on the success of stabilizing mine related disturbance over time.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except with less acres of disturbance within the CESA.

5.9 Air Resources

Existing air quality within the CESA is currently in attainment or unclassified for all criteria pollutants. Cumulative effects to air quality in the CESA from past, present, and RFFAs are largely from air borne dust released by mining, utility construction, vehicle travel on unpaved roads, and smoke from wildland fires. Mine development and exploration operations can also affect air quality through emissions from vehicles and process equipment. Grazing and timber harvesting can produce fugitive dust, but the quantities are minimal and are expected to remain approximately equal to present conditions. Travel on unpaved roads in the CESA can affect air quality from vehicle emissions and fugitive dust, but this type of use has not affected air quality measurably in the past and is not considered a concern. There are no Class I areas within 100 kilometers (62.5 miles) of the project area.

5.9.1 CESA Boundary

The CESA for air quality includes the Goshute Valley Hydrographic Basin (Basin 187) and the Thousand Springs Valley Hydrographic Basin (Basin 189D) (Figure 5.9-1). The air quality CESA was based on the anticipated extent of air impacts from the project activities.

5.9.2 Past and Present Disturbances

Historic development in the CESA has included mining and mineral exploration activity; utility and infrastructure construction; range improvements; road construction; oil, gas and geothermal development; and limited urban development. Those projects have accounted for short-term to medium-term surface disturbance and gaseous emissions. Smoke generated during wildland fires has intermittent impacts on local air quality.

Current exploration operations within the CESA include the West Pequop Exploration Project and the Long Canyon Exploration Project. There are also several NOIs; past and present sand and gravel operations; and oil, gas and geothermal developments within the CESA. The only

urban developments are the Montello and Oasis areas, which would produce negligible impacts to air quality.

5.9.3 Reasonably Foreseeable Future Disturbances

Foreseeable future activities in the CESA would be similar to those that are presently occurring. Most activities, with the exception of sand and gravel operations, would occur at elevations above the valleys where sensitive receptors (human residences) are located. Past, present, and reasonably foreseeable gravel production generates dust that could lead to moderate impacts in the immediate vicinity.

5.9.4 Cumulative Disturbances

Disturbance within the CESA associated with past, present, and RFFAs, in combination with ground disturbance from the Proposed Action, including hauling of ore and loaded carbon to Gold Quarry, has the potential to transport fugitive dust and increase gaseous emissions within the CESA. Reclamation to minimize wind erosion and disturbed ground would be expected after the operational life span of each project. Cumulative disturbance of high elevation operations would be expected to be mostly minor in areas of public activity or exposure. Ground disturbance in the lower elevations associated with utility corridors and other ground disturbances increase soil wind erosion and would continue to do so in the future until reclamation is successful. The air quality impacts from ground disturbance are typically localized and minor.

5.9.5 Cumulative Effects

Cumulative effects to air quality associated with the past, present, and RFFAs and the Proposed Action, including hauling of ore and loaded carbon to Gold Quarry, would include emission sources and increased fugitive dust. As of June 12, 2013, only one permit was identified from the Nevada Division of Environmental Protection (NDEP) website as being located within air quality planning area 187. Since the emissions from this one existing Class 3 permit source are so small and the distance from the Proposed Action is so great, no significant cumulative impacts would result (EMA, 2013). Modeling for the Proposed Action determined that all modeled pollutants, except the 24-hour particulate matter 2.5 microns in diameter or less ($PM_{2.5}$), were below the Environmental Protection Agency (EPA) Class II increment, which indicates a minor impact on air quality from project induced pollutants. The 24-hour $PM_{2.5}$, was well below the National Ambient Air Quality Standards (NAAQS) so the impact would indicate limited, moderate effects. Impacts from the Proposed Action would be limited to the immediate area surrounding the project boundary. Loaded carbon that would be hauled to Gold Quarry would be transported in a closed tank. This would reduce air quality impacts from hauling loaded carbon to Gold Quarry. In combination with past, present, and RFFAs, impacts to region-wide air quality are expected to remain minor. However, isolated pockets of moderate impacts are possible near vehicle access routes, and active mining and exploration projects, or expansions of existing mining or exploration projects.

Figure 5.9-1 Migratory Birds, Golden Eagles, Small Mammals, and Air Quality Resources CESA

There would be no meaningful change in cumulative impacts to air quality under the North Facilities Alternative except emissions would be slightly decreased due to shorter haul roads while all other aspects remain the same as in the Proposed Action.

5.10 Vegetation, including Noxious and Invasive Species

Disturbance within the vegetation CESA and the noxious and invasive species CESA primarily includes mining and exploration; NOIs; sand and gravel extraction operations; utility lines; oil, gas and geothermal development; roads; and wildland fires. Disturbance associated with these activities involves vegetation clearing, which promotes the establishment of noxious and invasive species. Vegetation species, including noxious and invasive species, within the CESA are common and widespread throughout Nevada.

5.10.1 CESA Boundary

The CESA boundary for vegetation resources includes the project area, including Section 21, T35N, R66E and a 0.25-mile wide corridor along the pipeline (Figure 5.7-1). The total area of this CESA is 37,207 acres, and primarily includes BLM and private lands. The CESA boundary was chosen because effects to vegetation would be limited to these areas. The CESA boundary for noxious and invasive species includes the West Big Springs, East Big Springs, Pilot Valley, Gamble Individual, and Dairy Valley Grazing Allotments (Figure 5.10-1). The total area for the noxious and invasive species is 1,039,527 acres. The CESA boundary was chosen because this is the area that has the potential to be affected by noxious and invasive species as a result of disturbance activities resulting from the Proposed Action.

5.10.2 Past and Present Disturbances

Past mineral development and exploration actions within the vegetation CESA includes sand and gravel operations and NOIs for a combined disturbance of approximately 41 acres. Portions of these projects have not been actively reclaimed; however, natural re-establishment of vegetation has occurred over time resulting in various levels of revegetation. Present mineral development and exploration actions within the CESA include the Long Canyon Exploration Project, which accounts for approximately 114 acres of disturbance; sand and gravel operations, which account for approximately 139 acres of disturbance; and NOIs, which account for approximately 10 acres of disturbance. Past mineral development and exploration actions within the noxious and invasive species CESA includes sand and gravel operations and NOIs for a combined disturbance of approximately 426 acres. As stated above, portions of these projects have not been actively reclaimed which may have allowed the spread of noxious and invasive species. Present mineral development and exploration within this CESA includes the West Pequop Exploration Project (400 acres of surface disturbance); the Long Canyon Exploration Project (114 acres of surface disturbance); Indian Springs Exploration Project (100 acres of surface disturbance); NOIs (70 acres of surface disturbance); and sand and gravel operations (1,023 acres of surface disturbance).

Impacts from mineral development and exploration can be long-term; however, re-establishment of vegetation would eventually occur, whether through the revegetation measures required for specific projects or through natural revegetation. Noxious and invasive weed species are more likely to establish in disturbed areas; therefore, successful reclamation assists to limit the spread of these species. Approximately 12 acres are associated with oil, gas, and geothermal development within the noxious and invasive species CESA. Impacts from oil, gas, and geothermal development are similar to those described for mineral development and exploration.

Within the vegetation CESA, there are approximately 129 acres of disturbance associated with past and present utilities, infrastructure, and public purpose activities. Within the noxious and invasive species CESA, there are approximately 2,618 acres of disturbance associated with utilities, infrastructure, public purpose activities, and range improvements. These types of activities include native vegetation clearing from construction, which increases the likelihood of noxious and invasive species establishment. After construction of utility and infrastructure projects, access roads remain for maintenance, which creates a minor, long-term impact to vegetation in the CESA. These roads may be used by those who would not have otherwise traveled to these locations (i.e. recreational use), which may lead to the spread and establishment of noxious and invasive species. Within the vegetation CESA, approximately 472 acres are associated with roads, including BLM roads, U.S. Highways, state routes, local/county roads and roads with no assigned ownership. Within the noxious and invasive species CESA, approximately 5,336 acres are associated with roads, including BLM roads, U.S. Highways, state routes, local/county roads and roads with no assigned ownership. Establishment of roads affect vegetation since areas disturbed by vehicles are often slower to re-establish because the soils have been compacted. Noxious and invasive species are typically the first species to establish, especially along road corridors and where vehicles travel off-road. Vehicles that travel off-road spread seeds of noxious and invasive species, and roads create access into areas that might not otherwise have been accessible.

Urban development within the vegetation CESA is associated with the Montello area, which consists of approximately 67 acres of disturbance. Urban development within the noxious and invasive species CESA includes Pilot Valley (648 acres), and Montello (67 acres). Urban development typically removes the native vegetation from the area. In areas that are disturbed and not properly revegetated, it may allow for the establishment of noxious and invasive species.

Approximately 435 acres of the vegetation CESA and approximately 52,603 acres of the noxious and invasive species CESA have previously burned as a result of wildland fires. Noxious and invasive species often become established in burned areas.

Figure 5.10-1 Grazing and Range Resources; Noxious and Invasive Species CESA

5.10.3 Reasonably Foreseeable Future Disturbances

Foreseeable future disturbance within the vegetation CESA includes approximately 10 acres of proposed disturbance from NOIs and 150 acres of proposed disturbance from sand and gravel operations. Foreseeable future disturbance within the noxious and invasive species CESA includes approximately 60 acres of surface disturbance from the proposed Angel Wing Exploration Project; approximately 35 acres of surface disturbance from proposed NOIs; and 180 acres of surface disturbance from proposed sand and gravel operations. There are approximately 25 acres of proposed surface disturbance associated with access road ROWs within the noxious and invasive species CESA. Disturbance as a result of these proposed activities would likely result in vegetation removal and possible establishment and spreading of noxious and invasive species.

5.10.4 Cumulative Disturbances

Of the 37,207 acres covered by the vegetation CESA, approximately 1,567 acres of disturbance are associated with past, present, and RFFAs, which represents a disturbance of approximately 4.2 percent of the CESA. The Proposed Action would increase the disturbance within the vegetation CESA by approximately 4,193 acres to approximately 5,760 acres, which would be approximately 16 percent of the CESA.

Of the 1,039,527 acres covered by the noxious and invasive species CESA, approximately 63,717 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 6.1 percent of the CESA. The Proposed Action would increase the disturbance within the noxious and invasive species CESA by approximately 4,193 acres to approximately 67,910 acres, which would be approximately seven percent of the CESA.

5.10.5 Cumulative Effects

Considering past, present, and RFFA disturbance in the vegetation CESA combined with the Proposed Action, cumulative effects would be minor since the vegetation community types are common and widespread throughout the CESA. Considering past, present, and RFFA disturbance in the noxious and invasive species CESA combined with the Proposed Action, cumulative effects would be minor since the Proposed Action would include a Weed Management Plan that would reduce the potential for noxious and invasive weed establishment in the project area (Newmont, 2012e). All surface disturbance from the Proposed Action would be reclaimed either concurrently during operations as areas become available, or once mining is complete. The Weed Management Plan includes management strategies and control techniques to prevent or minimize the establishment or spread of weed populations.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except less disturbance would occur; the waste rock storage facility (WRSF) would be located in the northern portion of the project area; and some support facilities would be relocated, resulting in different acreages of the same vegetation communities being disturbed.

5.11 Wildlife, Including Migratory Birds and Special Status Species

Cumulative effects to wildlife including migratory birds, small mammals, golden eagles, elk, mule deer, pronghorn antelope, and greater sage-grouse would primarily result from habitat changes associated with past and present mineral development and exploration activities; utilities, infrastructure and public purpose projects; roads; livestock grazing; wildland fires; and oil, gas and geothermal development. Other effects that are not quantified include noise disturbance/displacement for past and present activities, particularly mineral development and exploration, roads, and recreational activities. Cumulative effects may include loss of habitat, displacement, and fragmentation. Specific to small and less mobile wildlife species (e.g., small mammals, amphibians, and reptiles) direct effects from crushing and mortality by livestock and vehicles would have likely occurred within the CESA. Grazing can contribute effects by increasing competition for forage and changes in the structure or composition of native plant communities. Past and present effects on greater sage-grouse may have occurred from predation by common ravens.

5.11.1 CESA Boundary

The CESA boundary for wildlife includes five separate boundaries. The wildlife CESA boundaries are: (1) migratory birds, small mammals, and golden eagles (Figure 5.9-1); (2) mule deer (Figure 5.11-1); (3) special status species greater sage-grouse (Figure 5.11-2); (4) elk (Figure 5.11-3); and (5) pronghorn antelope (Figure 5.11-4).

Migratory Birds and Small Mammals

The migratory birds, small mammals, and golden eagle CESA includes the Goshute Valley Hydrographic Basin (Basin 187) and the Thousand Springs Valley Hydrographic Basin (Basin 189D). The total area of the CESA is 923,194 acres. The CESA was chosen because it incorporates the wildlife habitat within and adjacent to the project area where the majority of the impacts would occur from the Proposed Action.

Mule Deer

The mule deer CESA includes hunt units 71, 72, 73, 74, 75, 76, 77, 78, 79, and 91. The total area of the CESA is 3,797,521 acres. The CESA was chosen because these hunt units are how NDOW manages the Area 7 mule deer herd for northeastern Elko County. This is the area where the majority of impacts to mule deer would occur from the Proposed Action.

Special Status Species Greater Sage-Grouse

The greater sage-grouse CESA includes the Gollaher and East Valley Population Management Unit (PMUs). The total area of the CESA is 2,563,719 acres. The CESA was chosen because these are the PMUs in which greater sage-grouse are managed in the area. These two PMUs cover where greater sage-grouse occur within and adjacent to the project area.

Figure 5.11-1 Mule Deer CESA

Figure 5.11-2 Special Status Species Greater Sage-Grouse CESA

Figure 5.11-3 Elk CESA

Figure 5.11-4 Antelope CESA

Elk

The elk CESA includes hunt units 76, 77, 78, 79, 81, 105, 106, 107, and 109. The total area of the CESA is 3,428,030 acres. The CESA was chosen because these hunt units are how NDOW manages elk for the Thousand Springs, Goose Creek, Pequop Mountains, and Spruce Mountain Areas in Elko County and northeastern Elko County. These are the areas where the majority of impacts to elk would occur from the Proposed Action.

Pronghorn Antelope

The antelope CESA includes hunt units 76, 77, 78, 79, 81, 91, 105, 106, 107, and 121. The total area of the CESA is 4,284,654 acres. This CESA was chosen because these hunt units are how NDOW manages pronghorn antelope for northeastern Elko County. These are the areas where the majority of impacts to pronghorn antelope would occur from the Proposed Action.

5.11.2 Past and Present Disturbances

Migratory Birds, Small Mammals, and Golden Eagles

Within the migratory birds, small mammals, and golden eagle CESA, past and present disturbance have resulted from mineral development and exploration activities (1,985 acres); utilities, infrastructure, and public purpose activities (2,193 acres); railroads and roads (5,133 acres); oil, gas and geothermal development (18 acres); urban development (67 acres); wildland fires (17,813); and livestock grazing.

Past and present disturbances from mineral development and exploration activities have resulted in fragmentation of certain wildlife populations and their habitats, including golden eagle. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from oil, gas, and geothermal development activities, as well as, utility, infrastructure and public purpose activities, have resulted in disruption of certain wildlife populations and their habitats, including golden eagle. The relatively small area impacted by these operations (less than one percent of the CESA) would likely result in minor and temporary impacts. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Human presence tends to disturb many species of wildlife throughout their habitats. Past and present recreational uses in the area include hunting, fishing, all-terrain vehicle (ATV) use, and camping. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Urban development often permanently removes wildlife habitat, including golden eagle, and may result in fragmentation and displacement. However, the limited amount of urban development within the CESA (less than one percent) would likely have resulted in minor impacts.

Road construction and use tends to fragment wildlife habitats and leads to increased mortalities for certain species within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.

Wildlife are affected by livestock grazing due to competition for forage, direct mortality by trampling of small mammals, amphibians and reptiles, and habitat removal/conversion. Reduction to grass understory can also impact nesting success, predation, and wildland fire regimes. Proper rotation and stocking rates can minimize impacts to wildlife.

Mule Deer

Within the mule deer CESA, past and present disturbance have resulted from mineral development and exploration activities (6,545 acres); utilities, infrastructure and public purpose activities (12,019 acres); railroad and roads (15,602 acres); oil, gas and geothermal development (123 acres); urban development (2,684 acres); wildland fires (800,728 acres); and livestock grazing.

Past and present disturbances from mineral development and exploration activities have resulted in possible fragmentation, displacement and loss of habitat. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from oil, gas, and geothermal development activities as well as utility, infrastructure and public purpose activities, have resulted in disruption of mule deer habitat. The relatively small area impacted by these operations (less than one percent of the CESA) would likely result in minor and temporary impacts. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Past and present recreational uses in the area include hunting, fishing, ATV use, and camping. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Urban development often permanently removes habitat and my result in fragmentation and displacement. However, the limited amount of urban development within the CESA (less than one percent) would likely have resulted in minor impacts to mule deer.

Road construction has the potential to fragment mule deer habitat and may lead to increased mortalities within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.

Mule deer may be affected by livestock grazing due to competition for forage, and habitat removal/conversion. Deer habitat has been impacted by wildland fires that have occurred in the area since 1999. Wildland fires may often result in loss of forage area, establishment of invasive weeds, and loss of habitat.

Greater Sage-Grouse

Within both greater sage-grouse PMUs, past and present disturbances have resulted from the following activities: mineral development and exploration (3,676 acres); utilities, infrastructure, and public purpose activities (5,202 acres); railroads and roads (13,272 acres); oil, gas, and geothermal development (48 acres); urban development (2,522 acres); recreation activities (182 acres); wildland fires (323,019 acres); and livestock grazing.

Past and present disturbances from mineral development/exploration, oil, gas, and geothermal development activities can result in fragmentation and displacement of greater sage-grouse populations and fragmentation of their habitats. Direct mortalities and further habitat fragmentation from roads associated with these activities may have also occurred. Effects from these activities within the CESA have not been quantified by the land management agencies as quantification is very difficult.

Greater sage-grouse are thought to leave suitable habitat where anthropogenic noise is chronic and more so if it is intermittent (Blickley, Blackwood, Patricelli, 2012a). Male greater sage-grouse auditory display includes five sounds generally characterized as *wing swish*, which is produced by wing brushing against stiff, white feathers of neck and breast; *coos,* which are three low, single-frequency coos uttered after second wing swish; *plop*, which is a sound amplified by the air-filled esophageal pouches, these are broadband sounds and can be heard up to five kilometers away; w*histle*, which is a frequency-modulated whistle that is uttered between first and second plops; *snoring or hooting*, is an unusual series of several short notes that appear to be caused by sudden release of air at end of strutting display; and finally; *tail rattle*, which is a sound produced by tail-feathers when they rub against each other as they vibrate and occurs at end of strutting displays (Schroeder et al., 1999). Because sounds are essential to greater sage-grouse courtship displays, leks in particular, are susceptible to impacts from noise as they are locales that are used annually over decades and are central to the bird's reproduction. Effects from past and present mineral development/exploration, oil, gas, and geothermal development activities can cause increased ambient noise levels, which may disturb greater sage-grouse breeding, nesting, and brood rearing behavior.

Past and present disturbances from utilities, infrastructure and public purpose activities have resulted in disruption of greater sage-grouse populations and their habitats. In addition, past and present construction of power lines have potentially increased areas for predator perching which may have impacts on prey species such as greater sage-grouse. The relatively small area that has been impacted by these past and present activities (less than one percent of the CESA) would likely result in minor and temporary impacts. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from urban development activities would likely result in little or no effects to greater sage-grouse as they tend to be associated with areas adjacent or within previous urban disturbance and development. The relatively small area that has been impacted

by past and present urban development (less than one percent) would likely result in negligible, temporary impacts.

Road construction and use tends to fragment habitat and leads to increased mortalities for greater sage-grouse within their habitats. Mortalities may be direct from vehicle collisions or indirect from habitat fragmentation effects or other repercussions such as increased ambient noise levels, which may lead to habitat avoidance.

Human presence in the form of recreation tends to disturb greater sage-grouse throughout their habitat. Past and present recreational uses in the area include hunting, fishing, ATV use, camping, hiking, and picnicking. Human disturbance during periods of the year when greater sage-grouse are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Wildland fire destroys greater sage-grouse habitat and potentially leads to conversion from sagebrush dominant vegetation cover types to invasive annual grassland monocultures, which have little or no value to the species. Wildfire fragments greater sage-grouse habitats and leads to increased direct and indirect mortalities of greater sage-grouse within their habitats. Reseeding and restoration activities after wildland fires occur may have positive results on greater sage-grouse habitats although the effects from these activities are often not realized for many years until desirable plants have had an opportunity to become established.

Greater sage-grouse can be affected by livestock grazing due to competition for forage, water, and habitat removal/conversion. Proper rotation and stocking rates can minimize impacts to wildlife.

Pronghorn Antelope

Within the antelope CESA, past and present disturbances have resulted from mineral development and exploration activities (6,871 acres); utilities, infrastructure, and public purpose activities (13,440 acres); railroad and roads (25,989); oil, gas, and geothermal development (66 acres); urban development (4,468 acres); wildland fires (430,698 acres); recreation activities (182 acres) and livestock grazing.

Past and present disturbances from mineral development and exploration activities have resulted in possible fragmentation, displacement and loss of pronghorn antelope habitat. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from oil, gas, and geothermal development activities as well as utility, infrastructure and public purpose projects may have resulted in disruption of pronghorn antelope habitat. The relatively small area impacted by these operations (less than one percent of the CESA) would likely result in minor and temporary impacts. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Human presence tends to disturb many species of wildlife throughout their habitats. Past and present recreational uses in the area include hunting, fishing, ATV use, and camping. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Urban development often permanently removes habitat and may result in fragmentation and displacement. However, the limited amount of urban development within the CESA (less than one percent) would likely have resulted in minor impacts to mule deer.

Road construction and use may fragment pronghorn antelope habitat and lead to increased mortalities within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.

Pronghorn antelope are affected by livestock grazing due to competition for forage, and habitat removal/conversion. Antelope habitat has been impacted by wildland fires that have occurred in the area since 1999. Wildland fires can often result in loss of forage area, establishment of invasive weeds, and loss of habitat. However, wildland fires can prove to be beneficial to pronghorn antelope if perennial grasses and forbs dominate the recovering burned areas (NDOW, 2011a).

Elk

Within the elk CESA, past and present disturbance have resulted from mineral development and exploration activities (5,272 acres); utilities, infrastructure, and public purpose activities (8,588 acres); railroad and roads (18,559); oil, gas, and geothermal development (60 acres); urban development (2,290 acres); wildland fires (420,741 acres); recreation activities (182 acres) and livestock grazing.

Past and present disturbances from mineral development and exploration activities have resulted in possible fragmentation, displacement, and loss of habitat. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from oil, gas, and geothermal development activities as well as utility, infrastructure, and public purpose activities have resulted in disruption of elk habitat. The relatively small area impacted by these operations (less than one percent of the CESA) would likely result in minor and temporary impacts. Fragmentation effects have not been quantified by the land management agencies as quantification is very difficult.

Human presence tends to disturb many species of wildlife, including elk, throughout their habitats. Past and present recreational uses in the area include hunting, fishing, ATV use, and camping. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Urban development often permanently removes habitat and may result in fragmentation and displacement. However, the limited amount of urban development within the CESA (less than one percent) would likely have resulted in minor impacts to mule deer.

Road construction and use tends to fragment elk habitat and leads to increased mortalities within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.

Wildlife are affected by livestock grazing due to competition for forage, and habitat removal/conversion. Elk habitat has been impacted by wildland fires that have occurred in the area since 1999. Wildland fires can often result in loss of forage area, establishment of invasive weeds, and loss of habitat. However, wildland fires can prove to be beneficial to elk if perennial grasses and forbs dominate the recovering burned areas (NDOW, 2011a).

5.11.3 Reasonably Foreseeable Future Disturbances

Migratory Birds, Small Mammals, and Golden Eagles

Reasonably foreseeable future disturbances within the CESA include mineral exploration and sand and gravel operations (177 acres); utilities, infrastructure, and public purpose activities (58 acres); and recreation and conservation activities (284,288). These activities would lead to similar impacts as stated for past and present actions, primarily displacement and habitat fragmentation for certain species.

Mule Deer

Reasonably foreseeable future disturbances within the CESA include mineral exploration and sand and gravel operations (346 acres); utilities, infrastructure, and public purpose activities (35 acres); oil and gas development (445 acres); roads (175 acres); and recreation and conservation activities (5,249 acres). These activities would lead to similar impacts as stated for the past and present actions, primarily displacement and habitat fragmentation.

Greater Sage-Grouse

Reasonably foreseeable future disturbances within the CESA include mineral exploration and sand and gravel operations (855 acres); utilities, infrastructure, and public purpose activities (108 acres); urban development (3,675 acres); and recreation and conservation activities (399,569 acres). Future wildland fires would have impacts on greater sage-grouse habitat; however, future wildland fires cannot be quantified. These activities would lead to similar impacts as stated for the past and present actions, primarily displacement and habitat fragmentation.

Pronghorn Antelope

Reasonably foreseeable future disturbances within the CESA include mineral exploration and sand and gravel operations (1,014 acres); utilities, infrastructure, and public purpose activities (106 acres); roads (26 acres); urban development (3,675 acres); and recreation and conservation activities (499,608 acres). These activities would lead to similar impacts as stated for the past and present actions, primarily displacement and habitat fragmentation.

Elk

Reasonably foreseeable future disturbances within the CESA include mineral exploration and sand and gravel operations (976 acres); utilities, infrastructure, and public purpose activities (106 acres); roads (26 acres); urban development (3,675 acres); and recreation and conservation activities (499,608 acres). These activities would lead to similar impacts as stated for the past and present actions, primarily displacement and habitat fragmentation.

5.11.4 Cumulative Disturbances

Migratory Birds, Small Mammals, and Golden Eagles

Of the 923,194 acres covered by the CESA, approximately 311,732 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 34 percent of the CESA. However, approximately 284,287 acres are associated with the Wild Horse Eco Sanctuary. The Wild Horse Eco Sanctuary would result in minor surface disturbance, primarily from fencing improvements and construction of new water improvements (e.g. water wells and water pipelines). .However, the Eco Sanctuary may result in potential habitat fragmentation and wildlife displacement, so the acreage is factored into the cumulative disturbance. The Proposed Action would increase disturbance area within the CESA by approximately 4,193 acres to approximately 315,925 acres, which is also approximately 34 percent of the CESA.

Mule Deer

Of the 3,797,521 acres covered by the CESA, approximately 842,494 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 22 percent of the CESA. The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to approximately 846,687 acres, which is also approximately 22 percent of the CESA.

Greater Sage-Grouse

Of the 2,563,719 acres covered by the CESA, approximately 752,144 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 29 percent of the CESA. Approximately 399,568 acres are associated with the Wild Horse Eco Sanctuary. The Wild Horse Eco Sanctuary would result in minor surface disturbance, primarily from fencing improvements and construction of new water improvements (e.g. water wells and water pipelines). However, the Eco Sanctuary has the potential to result in habitat fragmentation and displacement of greater sage-grouse, so the acreage is factored into the cumulative disturbance. The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to approximately 756,337 acres, which is also approximately 30 percent of the CESA.

Pronghorn Antelope

Of the 4,284,654 acres covered by the CESA, approximately 986,143 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 23 percent of the CESA. Approximately 499,607 acres are associated with the Wild Horse Eco Sanctuary. The Wild Horse Eco Sanctuary would result in minor surface disturbance, primarily from fencing improvements and construction of new water improvements (e.g. water wells and water

pipelines). However, the Eco Sanctuary has the potential to result in habitat fragmentation and displacement of pronghorn antelope, so the acreage is factored into the cumulative disturbance. The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to approximately 990,336 acres, which is also a disturbance of approximately 23 percent of the CESA.

Elk

Of the 3,428,030 acres covered by the CESA, approximately 960,083 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 28 percent of the CESA. Approximately 499,607 acres are associated with the Wild Horse Eco Sanctuary. The Wild Horse Eco Sanctuary would result in minor surface disturbance, primarily from fencing improvements and construction of new water improvements (e.g. water wells and water pipelines). However, the Eco Sanctuary has the potential to result in habitat fragmentation and displacement of elk, so the acreage is factored into the cumulative disturbance. The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to approximately 964,276 acres, which is also a disturbance of approximately 28 percent of the CESA.

5.11.5 Cumulative Effects

Migratory Birds, Small Mammals, and Golden Eagles

Cumulative impacts on migratory birds, small mammals, and golden eagle from past, present, and RFFAs in combination with the Proposed Action would result in cumulative displacement and habitat fragmentation, as well as short-term to long-term disturbance and removal of habitat and forage area, this includes displacement of golden eagles from known nesting territory. Wildlife displacement and habitat fragmentation decreases survival rates of affected individuals to some degree and increases competition. The additional presence of roads may increase mortality from vehicle collisions. If disturbance areas are not reclaimed properly, invasive weeds may establish which would have additional long term impacts on wildlife habitat.

Land clearing activities associated with the Proposed Action would disturb several types of wildlife habitat, which potentially could result in mortality from trampling or crushing, habitat fragmentation, and habitat removal. The Proposed Action would also increase noise levels due to heavy equipment operation, and would increase vehicular and human presence along roads and land clearing areas. The Proposed Action would remove one of the golden eagle nests identified within the project area, which would represent a direct take of a nest by physically removing the nest and its substrate. Indirect take could occur to the other nest identified during the raptor surveys. This potential indirect take could occur though mining related disturbance throughout the life of the mine. Project EPMs would help reduce cumulative impacts to migratory birds, mammals, and golden eagle resulting from the Proposed Action. The Proposed Action, in combination with past, present, and RFFAs, would result in negligible to moderate cumulative impacts to wildlife, including golden eagle, within the CESA.

Under the North Facilities Alternative, cumulative impacts to migratory birds, mammals, and golden eagle would be similar to the Proposed Action except most mine facilities would be

moved to the north. The North Facilities Alternative would reduce impacts to the Great Basin Xeric Mixed Sagebrush Shrubland habitat type. In general, fewer acres of wildlife habitat would be affected. In addition, the distance between the WRSF and the mine pit would be a 2,000-foot wide gap. This corridor would allow easier wildlife migrational movement through the project area.

Mule Deer

Impacts from past, present, and RFFAs in combination with the Proposed Action would result in cumulative displacement and habitat fragmentation, as well as short-term to long-term disturbance and removal of habitat and forage area. Displacement and habitat fragmentation decreases survival rates of affected individuals to some degree and increases competition. The additional presence of roads may increase mortality from vehicle collisions. If disturbance areas are not reclaimed properly, invasive weeds may establish which would impact the available forage area and habitat for mule deer.

The Proposed Action would impact mule deer seasonal movement since the location of several mine components would effectively fragment their seasonal habitat. If activities at the mine force deer to move through a narrower corridor west of the mine pit, the deer may be more susceptible to predation by mountain lions, or may not move to crucial winter habitat. Construction noise and human presence my stress unhabituated deer during the winter months when mule deer may be seeking crucial winter habitat further south within the western edge of Goshute Valley and the Pequop Mountains that are free of deep snows. The Proposed Action would perform concurrent reclamation to facilitate habitat recovery; however, there would still be impediments to deer migration. The Proposed Action, in combination with past, present, and RFFAs, would result in moderate cumulative effects to mule deer migration within the CESA.

Under the North Facilities Alternative, cumulative impacts to mule deer would be the same as the Proposed Action except most mine facilities would be moved to the north. The North Facilities Alternative would reduce impacts to the Great Basin Xeric Mixed Sagebrush Shrubland habitat type. In general, fewer acres of wildlife habitat would be affected. In addition, the distance between the WRSF and the mine pit would be a 500-foot wide gap, and concurrent reclamation would be performed on the west slope of the WRSF to facilitate habitat recovery and further widening of the migration corridor. This corridor would allow easier mule deer migrational movement through the project area. The North Facilities Alternative, in combination with past, present, and RFFAs, would result in minor to moderate cumulative effects to mule deer migration within the CESA.

Greater Sage-Grouse

Impacts from past, present, and RFFAs in combination with the Proposed Action would result in cumulative displacement and habitat fragmentation, as well as short-term to long-term disturbance and removal of habitat and forage area. Displacement and habitat fragmentation decreases survival rates (decreased breeding, nesting, and brood survival) of affected individuals. Cumulative impacts would result from increased ambient noise levels and direct mortalities associated with collisions with vehicles, fences, and transmission lines.

The Proposed Action would result in direct impacts by habitat removal and fragmentation and increased noise during construction and mining operations. Increased human presence, borrow sites, and fencing may impede easy access to greater sage-grouse habitat. Fences associated with the project may create direct mortality from collision or may create indirect impacts through increased predation by providing perches for raptors. Additional vehicle traffic may also result in increased mortality due to collisions. The Proposed Action, in combination with past, present, and RFFAs, would result in minor to major cumulative impacts to greater sage-grouse within the CESA, as a result of increased noise, habitat removal, and fragmentation.

Under the North Facilities Alternative, cumulative impacts to greater sage-grouse would be similar to the Proposed Action, except most mine facilities would be moved to the north, farther from sensitive species habitat including greater sage-grouse leks that are in and near the southern part of the project area. The North Facilities Alternative would reduce impacts to the Great Basin Xeric Mixed Sagebrush Shrubland habitat type. In general, fewer acres of greater sage-grouse habitat would be affected. The North Facilities Alternative would cumulatively impact fewer acres of Preliminary Priority Habitat (PPH), but increase Preliminary General Habitat (PGH) habitat disturbance.

Pronghorn Antelope and Elk

Impacts from past, present, and RFFAs in combination with the Proposed Action would result in cumulative displacement and habitat fragmentation, as well as short-term to long-term disturbance and removal of habitat and forage area. Displacement and habitat fragmentation decreases survival rates of affected individuals to some degree and increases competition. The additional presence of roads may increase mortality from vehicle collisions. If disturbance areas are not reclaimed properly, invasive weeds may establish which would impact the available forage area and habitat for pronghorn antelope.

The Proposed Action would result in some direct impacts from removal of available habitat as well as causing avoidance behavior resulting from the mining activities. However, sufficient reclamation would reduce impacts to pronghorn antelope and elk within the CESA to negligible. The Proposed Action, in combination with past, present, and RFFAs, would result in negligible cumulative effects to pronghorn antelope and elk.

The North Facilities Alternative would result in similar cumulative effects to pronghorn antelope and elk as the Proposed Action.

5.12 Grazing and Range Resources

Cumulative effects to grazing and range resources in the CESA primarily occur from mining exploration projects; sand and gravel operations; utilities and infrastructure projects; roads; wildland fires; oil, gas, and geothermal development; and urban development. These activities often modify landscapes and remove vegetation resources that would otherwise be available for

grazing and range resources. These disturbance activities also increase the likelihood of noxious and invasive species establishment.

5.12.1 CESA Boundary

The CESA boundary for range resources includes the West Big Springs, East Big Springs, Pilot Valley, Gamble Individual, and Dairy Valley Grazing Allotments (Figure 5.10-1). The total area of the CESA is 1,039,527 acres. This CESA boundary was chosen because it encompasses the allotments and the permitted range that may be impacted by the Proposed Action.

5.12.2 Past and Present Disturbances

There are several past and present mineral exploration projects, NOIs, and sand and gravel operations within the CESA which amount to approximately 2,133 acres of surface disturbance. Present mineral exploration activities include the West Pequop Exploration Project, the Long Canyon Exploration Project, and the Indian Springs Exploration Project. Extraction and exploration of mineral and aggregate resources directly removes land from grazing and range use and increases the likelihood of spreading noxious and invasive species. These noxious and invasive species further reduce the amount of usable range and available forage.

There are approximately 12 acres of disturbance associated with oil, gas, and geothermal development within the CESA. Disturbances associated with oil, gas, and geothermal development increase the likelihood of spreading noxious and invasive species, and reduces the amount of usable range and available forage. Approximately 2,618 acres are associated with utilities, infrastructure, and public purpose activities, which include the ON Line/Southwest Intertie Transmission Line Project. While disturbance from utilities and infrastructure construction does not typically reduce access to range resources, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and invasive species establishment, which would reduce the amount of forage available for grazing and range resources.

Approximately 5,336 acres of disturbance are associated with roads within the CESA. This acreage includes I-80, U.S. Highways, state routes, local/county roads, BLM roads, and roads with no assigned name or ownership. These roads provide opportunity for the spread of noxious and invasive species, which would reduce the available forage for grazing and range resources.

Urban development accounts for approximately 715 acres of surface disturbance, primarily from Montello and the Pilot Valley area. Urban development, if on public land, may remove areas from being used for grazing and range. However, urban development is typically on private lands, so impacts to grazing and range resources are negligible. In addition, the very small level of urban development within the CESA would result in a negligible impact on grazing and range resources.

Approximately 52,603 acres have previously been burned by wildland fires. Disturbance associated with unreclaimed wildland fire areas is often naturally revegetated with noxious and

invasive species such as cheatgrass. These species reduce the amount of useable range and available forage.

5.12.3 Reasonably Foreseeable Future Disturbances

Foreseeable future actions include mineral exploration, NOIs, sand and gravel operations, and access roads. Proposed exploration operations include the Angel Wing Exploration Project (approximately 60 acres of proposed disturbance). Proposed NOIs account for approximately 35 acres of disturbance, and sand and gravel operations account for approximately 180 acres of proposed disturbance. Disturbance associated with these proposed activities would temporarily remove a total of approximately 275 acres from utilization as grazing and range. However, after reclamation of the proposed mineral exploration activities, the area would again be used for grazing and range resources. Proposed access roads account for approximately 25 acres of disturbance. The proposed roads offer additional opportunity for the spread of noxious and invasive species.

5.12.4 Cumulative Disturbances

The CESA for grazing and range resources is 1,039,527 acres (18,562 Animal Unit Months [AUMs] assuming an average stocking rate of 56 acres per AUM) of BLM and privately controlled lands. Of the 1,039,527 acres covered by the CESA, approximately 63,717 acres of disturbance (approximately 1,137 AUMs), are associated with known and quantifiable past, present, and RFFAs, which is a disturbance of approximately six percent of the CESA. The Proposed Action would increase the disturbance within the CESA by 4,193 acres to approximately 67,910 acres (1,213 AUMs), or approximately 6.5 percent of the CESA. Reclamation and continued monitoring until successful establishment of vegetation species would result in improved range resources. Livestock grazing on the five allotments within the CESA would continue to occur into the reasonably foreseeable future.

5.12.5 Cumulative Effects

Past, present, and RFFA disturbance combined with the Proposed Action would impact approximately 1,213 AUMs, which is approximately 6.5 percent of the estimated 18,562 AUMs within the CESA. Considering past, present, and RFFA disturbances in the grazing and range resources CESA, combined with the Proposed Action, cumulative effects to grazing resources would be negligible because range resources and vegetation community types are common and widespread throughout the CESA. Range displacement would be negligible since range resources are prevalent throughout the CESA, and vegetation resources would be restored after successful reclamation.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except with less acres of disturbance within the CESA.

5.13 Wilderness Characteristics Resources

There are no federally-designated Wilderness Areas within the CESA, and there are also no WSAs within the CESA. Approximately 27,835 acres within the CESA have been determined to have wilderness characteristics (BLM, 2011d). Cumulative effects within the CESA range from mineral exploration; sand and gravel operations; NOIs; roads; and utilities, infrastructure; and public purpose activities. These activities have the potential to decrease the wilderness characteristics within the CESA, and they may reduce the opportunity for primitive, unconfined solitude and recreation within the CESA. Primarily, these actions would increase the amount of visible and audible evidence of humankind that is perceptible from the lands with wilderness characteristics.

5.13.1 CESA Boundary

The CESA boundary for wilderness is the Lands with Wilderness Characteristics (LWC) Inventory Area including Pequop LWC Inventory Area specified in the Long Canyon Expanded Exploration EA (Figure 5.13-1). The CESA boundary for wilderness characteristics resources is 63,235 acres. The CESA was chosen because it incorporates the areas of the West Pequop Mountains that are managed by the BLM.

5.13.2 Past and Present Disturbances

Past actions within the CESA includes 40 acres associated with NOIs; one acre associated with sand and gravel operations; 46 acres associated with telephone and fiber optic lines/communication sites; and 246 acres associated with roads, including I-80, BLM roads, and local/county roads. Present disturbance includes 400 acres associated with the West Pequop Exploration Project; 114 acres associated with the Long Canyon Exploration Project; 30 acres associated with NOIs; and 120 acres associated with sand and gravel operations. All of these disturbances have the potential to reduce the opportunity for primitive, unconfined solitude in the area, as well as creating the potential to decrease the wilderness characteristics of the area.

5.13.3 Reasonably Foreseeable Future Disturbances

Foreseeable future actions include 10 acres associated with proposed NOIs. These activities have the potential to result in the same impacts as the past and present activities.

5.13.4 Cumulative Disturbances

Of the 63,235 acres covered by the wilderness characteristics CESA, 2,930 acres of disturbance are associated with past, present, and RFFAs, which is approximately 4.6 percent of the CESA. The Proposed Action would increase disturbance within the CESA by approximately 4,193 acres to approximately 7,123 acres, or approximately 11 percent of the CESA.

5.13.5 Cumulative Effects

Considering past, present, and RFFA disturbances in the wilderness characteristics CESA combined with the Proposed Action, cumulative effects include visibility of some components of

the proposed project and increased noise levels from construction and operation of the proposed project combined with the existing effects from mineral exploration and sand and gravel operations, which may result in loss of opportunities for outstanding solitude. Impacts associated with visibility of the proposed project would be reduced by reclamation occurring at the end of the project life. Impacts associated with increased noise from the Proposed Action would not be audible from the entire CESA, only areas close to the operations.

Most of the components from the Proposed Action would be reclaimed, which would reduce their visual contrast with the natural landscape, and thus their visibility. As a result of reclamation activities, and the fact that the Proposed Action would not have visual and audible impacts on the entire CESA, cumulative impacts from the Proposed Action would be minor within the CESA.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action, except construction and operation of most components of the project would occur further away from the lands with wilderness characteristics located within the Proposed Action project area. The increased distance separating the project components and the lands with wilderness characteristics would allow for decreased impacts of project noise. Cumulative impacts from the North Facilities Alternative would be minor within the CESA.

5.14 Cultural and Paleontological Resources

Cultural Resources

Cultural resources potentially vulnerable to cumulative effects include prehistoric sites, historic sites, historic structures and traditional cultural properties (TCPs). The incremental degradation of the resources reduces the information and interpretive potential of historic properties. No TCPs were documented within the project area. Sixty-two unevaluated or National Register of Historic Places (NRHP)-eligible sites would be directly impacted through project construction and operations.

Approximately 271,793.6 acres of the cultural resources CESA are managed by the BLM. This equates to approximately 60 percent of the CESA under federal regulatory oversight. The remaining land within the CESA includes 183,404.7 acres (40 percent) of private lands, which are generally not subject to Section 106 of the National Historic Preservation Act of 1966 (as amended) (NHPA), unless there is a federal nexus.

Paleontological Resources

The main impacts to paleontological resources often are the result of illegal collecting activities. Ground-disturbing activities may destroy paleontological resources if a field survey by a qualified paleontologist is not conducted prior to surface disturbing activities. Surface disturbance activities within the CESA are primarily from mineral development and exploration operations; utilities, infrastructure and public purposes activities; roads; recreation; limited urban development; and wildland fires.

Figure 5.13-1 Wilderness Characteristics Resources CESA

5.14.1 CESA Boundary

Cultural Resources

The CESA boundary for cultural resources includes the ethnographic relationships between the Pequop Mountains and the Goshute Valley and the local recreational use area (Figure 5.14-1). The cultural CESA includes the Thousand Springs Valley Hydrographic Basin (Basin 189D). The total area of the CESA is 455,198 acres. This CESA boundary was chosen because it encompasses the project area as well as the area of historic activities associated with the cultural resource sites in and around the project area.

Paleontological Resources

The CESA boundary for paleontological resources includes the project area, including Section 21, T35N, R66E and a 0.25-mile wide corridor along the pipeline (Figure 5.7-1). The total area of the CESA is 37,207 acres, and primarily includes BLM and private lands. The CESA boundary was chosen because it was the likely area where paleontological impacts would result from the Proposed Action.

5.14.2 Past and Present Disturbances

Cultural Resources

Past and present disturbances to cultural resources in the CESA are the result of mining and exploration operations; sand and gravel operations; above ground and below ground utilities; road construction and maintenance; ranching/livestock grazing; urban development; wildland fire; and increased vandalism and/or unauthorized artifact collection.

Development on state and federal lands requires that cultural resource surveys be conducted to determine the presence of cultural resource sites eligible for listing on the National Register; however, there is no such requirement for disturbance on private lands unless there is a federal or state nexus. As directed by Section 106 of the NHPA, National Register-eligible sites are generally avoided or mitigated if avoidance is not possible for projects with a federal or state nexus. Projects/development disturbances conducted prior to 1966 (i.e., prior to NHPA) and/or those without a federal or state nexus generally did not identify/quantify cultural resource sites or impacts to them.

Past disturbances include approximately 50 acres of sand and gravel operations and 165 acres associated with NOIs. There are approximately 992 acres of past disturbance associated with utilities and infrastructure activities (including range improvements), and approximately 3,004 acres associated with road construction, including I-80, U.S. Highways, state routes, local/county roads, BLM roads, and roads with no assigned ownership. Construction of roads can have substantial and long lasting adverse effects if cultural resources are present and can be accessed by the new road, since improved access to historic areas may increase vandalism or illegal collection of cultural resources. Present mineral development and exploration activities include approximately 400 acres associated with the West Pequop Exploration Project, approximately 114 acres associated with the Long Canyon Exploration Project, and 100 acres associated with the Indian Springs Exploration Project. There are approximately 45 acres associated with present NOIs, and approximately 514 acres associated with present sand and

gravel operations. Present disturbance associated with utilities includes approximately 412 acres associated with the ON Line/Southwest Intertie Transmission Line Project. There are approximately nine acres associated with present oil, gas and geothermal development. Urban development within the CESA is limited and includes the Montello area.

The past and present land uses in the CESA may have resulted, or may result, in the loss, disturbance, theft, and burial of cultural artifacts and sites, as well as the modification and alteration of the setting of cultural sites and resources. The incremental degradation of cultural resources reduces the information and interpretive potential of historic properties.

Paleontological Resources

The various mineral development and exploration projects and other surface disturbances within the paleontological resources CESA are located on a variety of bedrock formations with varying fossil potential. Not all disturbances would pose a risk to fossil resources, particularly if a field survey was completed and mitigation measures were in place prior to ground-disturbing activities. RFFAs occurring in non-fossil-bearing geologic formations would not impact or affect paleontological resources. Past roads and present roads may have resulted in easier access to paleontological resources, which may have provided opportunities for illegal collecting activities.

5.14.3 Reasonably Foreseeable Future Disturbances

Cultural Resources

The RFFA disturbances in the CESA include mineral exploration, NOIs, and sand and gravel operations. Approximately 60 acres are associated with the Angel Wing Exploration Project; approximately 20 acres are associated with NOIs; and approximately 150 acres are associated with sand and gravel operations. If the disturbance includes a federal or state nexus, avoidance and/or mitigation of impacts to NRHP-eligible cultural resources would be required. Other unquantifiable disturbances would likely include road maintenance, grazing, vegetation management, and recreational activities. The possibility of increased dispersed recreational use of the area increases the potential for vandalism and/or artifact collection at cultural sites.

Paleontological Resources

Reasonably foreseeable future disturbances include sand and gravel operations and NOIs. Impacts from these RFFAs on paleontological resources would be similar to those described for past and present actions.

5.14.4 Cumulative Disturbances

Cultural Resources

Of the 455,198 acres covered by the cultural resources CESA, 24,657 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 5.4 percent of the CESA. The Proposed Action would increase the disturbance within the CESA by 4,193 acres to approximately 28,850 acres, or approximately six percent of the CESA.

Figure 5.14-1 Cultural Resources CESA

Paleontological Resources

Of the 37,207 acres covered by the paleontological resources CESA, approximately 1,567 acres of surface disturbance have occurred from past, present, and RFFAs, which is approximately four percent of the CESA. The Proposed Action would increase surface disturbance by approximately 4,193 acres to approximately 5,760 acres, which is approximately 16 percent of the CESA.

5.14.5 Cumulative Effects

Cultural Resources

Past, present, and future development would contribute to the cumulative effects, both direct and indirect, on prehistoric and historic cultural resources in the CESA. All proposed, reasonably foreseeable developments would be completed under the oversight of Section 106 of NHPA if there were a federal nexus and thus project impacts would be individually addressed. Impacts to specific cultural resources would depend on the exact project location and extent of ground disturbance, as well as land jurisdiction. Section 106 of the NHPA requires avoidance and/or mitigation of impacts to NRHP-eligible cultural resources by federal undertakings. However, cumulative impacts to cultural resources from reasonably foreseeable projects on private lands with no federal or state nexus would not require regulatory oversight.

For the Proposed Action, unavoidable adverse effects to historic properties would be mitigated in accordance with the Programmatic Agreement (Appendix 3E). The Programmatic Agreement states all sites would be avoided where practicable by project design. If avoidance is not feasible, further mitigation for properties must be taken in accordance with the Programmatic Agreement. A historic properties treatment plan would be developed that may include testing and/or mitigation. During construction activities, any unanticipated cultural resources discovered would require that all work within a 100-meter area cease immediately and the BLM Authorized Officer be notified immediately. The BLM would then evaluate the discovery in coordination with other consulting parties in order to determine and implement appropriate treatment, if necessary.

Development of the Proposed Action accounts for less than one percent of the CESA, but it may contribute to the loss of site integrity of NRHP-eligible historic properties, if they could not be avoided by project design. This impact, in addition to other reasonably foreseeable future activities on federal or state lands would be minor. Data recovery of NRHP-eligible sites that could not be avoided would expand the regional database and knowledge of prehistoric and historic contexts. The mitigation measures developed to avoid direct impacts to cultural resources would also minimize contributions to cumulative effects. Cumulative impacts to cultural resources from past, present, and reasonably foreseeable future activities combined with the Proposed Action would be minor to moderate.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except with less acres of disturbance within the CESA.

Paleontological Resources

Cumulative effects resulting from past, present, and RFFAs in combination with the Proposed Action may include illegal collecting and disturbance of paleontological resources. However, invertebrate fossils in the specific geologic materials that would be disturbed by the Proposed Action are not scientifically significant and are likely to be found throughout the outcrop area of these formations in northeast Nevada. No known vertebrate fossils are known to occur in the formations that would be disturbed by the Proposed Action. Implementation of project EPMs would minimize potential degradation of any significant paleontological resources that may be discovered. Cumulative impacts to paleontological resources from the Proposed Action would be negligible.

Cumulative effects from the North Facilities Alternative would be the same as the Proposed Action except with less acres of disturbance within the CESA.

5.15 Land Use, Access and Transportation

The CESA is comprised of predominantly federally-managed lands with approximately 78 percent of the CESA being administered by federal; agencies, including Bureau of Indian Affairs, BLM, Department of Defense, United States Fish and Wildlife Service (USFWS), and USFS. Land use within the CESA consists mainly of agriculture, livestock grazing, mineral development and exploration, recreation, wildlife habitat, limited urban development, and utilities.

5.15.1 CESA Boundary

The CESA boundary for land use and access is the BLM Wells Field Office boundary (Figure 5.15-1). The CESA boundary for transportation includes I-80 from Carlin, Nevada, to West Wendover, Nevada; County Road 790, State Route 233, and County Road 765 to the terminus of the proposed pipeline (Figure 5.15-2). The total area of the land use and access CESA is approximately 5,960,191 acres. Acres of disturbance are not applicable to transportation, since the impacts from past, present, and RFFAs on transportation result from the project traffic pattern and not actual disturbance. Impacts for transportation are discussed qualitatively due to the lack of available quantitative data about past, present, and future traffic generation. The CESA boundary was chosen because it incorporates the Proposed Action and the area where the Proposed Action would have a cumulative impact on land use, access and transportation.

5.15.2 Past and Present Disturbances

Past and present disturbances that have affected land use and access in the CESA include metallic and non-metallic mineral extraction and exploration; oil, gas, and geothermal exploration; utilities, infrastructure and public purpose projects; urban development; roads; wildland fires; and recreation uses. Total past and present surface disturbance within the CESA is 896,501 acres, which is approximately 15 percent of the CESA.

Figure 5.15-1 Recreation and Land Use Resources CESA

Figure 5.15-2 Transportation; Hazardous Materials and Waste CESA

There are approximately 2,548 acres of Wilderness Areas, and approximately 174,415 acres of WSAs within the land use and access CESA. Whereas WSAs and Wilderness Areas do not add to the cumulative surface disturbance within the CESA, they have a long-term impact since they restrict land use and access to varying degrees.

There has been approximately 2,537 acres of disturbance associated with past mineral development and exploration activities, including NOIs, sand and gravel operations, and the Victoria Mine. Much of this disturbance has largely been unreclaimed. Present disturbance from mineral development and exploration operations includes approximately 4,671 acres of surface disturbance. Present mineral development and exploration activities include, Graymont Pilot Peak Mine, Kinsley Exploration Project, the West Pequop Exploration Project, the Long Canyon Exploration Project, the Indian Springs Exploration Project, Maverick Springs Exploration Project, Big Ledge Barite Mining Operation, NOIs, and numerous sand and gravel operations. There is approximately 147 acres associated with oil, gas, and geothermal development. Land use is typically restricted in active mining and exploration operations, as well as oil, gas, and geothermal development sites. Impacts to land use from mining and exploration operations, as well as from gas, oil, and geothermal developments, can be long-term if left unreclaimed; however, impacts are typically short-term until reclamation is completed. In addition, these activities often have impacts to the transportation system by increasing traffic on the surrounding road network. Traffic generation depends on the size and intensity of operations of the facilities.

There are approximately 12,375 acres of surface disturbance associated with utilities, infrastructure and public purpose activities (not including railroads). This disturbance includes approximately 1,667 acres of disturbance associated with telephone, fiber optic lines, and communication sites; approximately 8,643 acres associated with power lines and substations (including the ON Line/Southwest Intertie Transmission Line Project); approximately 133 acres associated with the Ruby Pipeline; and approximately 554 acres associated with water and sewer infrastructure. Land use, access, and transportation impacts from utilities and infrastructure are generally short-term, with impacts mainly occurring during construction. However, easements over the utility lines and other infrastructure can limit land use within the easement area to a certain extent. In addition, utility lines often require routine maintenance, which could increase maintenance traffic within the CESA during maintenance activities.

The West Wendover Sewage Treatment Facility, the Jackpot Sewage Treatment Facility, and the Wells Sewage Treatment Facility are associated with approximately 544 acres of surface disturbance. The Hayden Field Airport, and the Harriet Field Airport are associated with approximately 518 acres of surface disturbance. Approximately 145 acres of disturbance are associated with the West Wendover City Class II Solid Waste Disposal Site and the Jackpot Sanitary Landfill. Approximately 171 acres are associated with the West Wendover Maintenance Station, the Ferguson Springs Maintenance Station, the Ruby Valley Maintenance Station, the State of Nevada Wells Conservation Camp, and range improvements. Impacts from these uses often have a long-term impact on land use and access since other land uses and access are restricted as long as the facilities remain in operation. The impacts to

transportation vary depending on the size and traffic generating potential of the facilities, but often some level of traffic increase results from the projects.

Roads account for approximately 26,392 acres of disturbance, and railroads account for 1,940 acres of disturbance. Roads within the land use and access CESA include I-80, U.S. Highways, state routes, local/county roads, BLM roads, USFS roads, and roads with no assigned ownership. Impacts to land use, access and transportation resulting from roads are long-term. Construction of roads and railroads changes the land use within the area traversed by the road. Roads have the potential to increase the use of the transportation system or alter the traffic pattern by allowing additional access roads.

Approximately 2,887 acres of surface disturbance within the land use and access CESA are associated with urban development. Urban development within the CESA includes, the city of West Wendover; Currie; Pilot Valley; Montello; Jackpot; San Jacinto; and the city of Wells. Urban development has a significant effect on land use and access since it often permanently removes the areas developed from being used for other land uses, such as grazing, agriculture or typical recreation uses (i.e. hunting, hiking, camping, skiing, etc.). Urban development also typically increases traffic on the transportation system and road network within the CESA. Transportation increases depend on the overall size of developments. However, urban development within the CESA is fairly low, making up less than one percent of the CESA.

Present recreation actions within the land use and access CESA include the West Wendover Equestrian Park, the Hawkwatch International Research Project, and the Leppy Hills Trail System. Total land disturbance from these recreation activities is approximately 182 acres. The West Wendover Equestrian Park removes approximately 142 acres from being used for other land uses within the CESA, primarily grazing and range uses. The Leppy Hills Trail System has the potential to increase recreational traffic within the CESA and removes approximately 34 acres from being used for other land uses. The Hawkwatch International Research Project has a negligible impact to land use, access, and transportation, with only six acres of surface disturbance within the CESA, and a negligible impact on transportation.

From 1999 to 2008, wildland fires burned approximately 845,370 acres within the land use and access CESA. Wildfires can create impacts on land use and access, primarily for livestock grazing, agriculture, and recreation. These impacts are typically short-term until revegetation and/or restoration is complete.

5.15.3 Reasonably Foreseeable Future Disturbances

RFFA within the land use and access CESA consist of mineral development and exploration activities; utilities, infrastructure and public purpose activities; oil, gas, and geothermal development; road construction; urban development; and recreation and conservation actions. Total surface disturbance associated with RFFAs is approximately 527,547 acres, which represents approximately 8.9 percent of the CESA.

There are several proposed mineral development and exploration operations including Graymont Pilot Peak Mine; the Victoria Mine; Angel Wing Exploration Project; Big Ledge Mine Exploration Project; exploration expansion of the Kinsley Exploration Project; numerous NOIs; and numerous sand and gravel operations. Approximately 1,126 acres of surface disturbance are associated with proposed mineral development and exploration operations. Impacts from these operations would be similar to those described for past and present mineral development operations.

Approximately 123 acres of surface disturbance are associated with proposed utilities, infrastructure, and public purpose activities. These activities include telephone and fiber optic lines; power lines; the Zephyr Power Transmission 500 kV DC Transmission Line; the Wells Construction Demolition Landfill; and numerous range improvements (fences, cattle guards, etc.). Impacts to land use, access, and transportation are usually short-term and would be similar to those described for past and present utility, infrastructure and public purpose projects.

Approximately 445 acres of RFFA surface disturbance is associated with Noble Energy's Mary's River Project, which includes drilling approximately 20 wells on both BLM-administered and private lands. Impacts from the Mary's River Project to land use, access, and transportation would include prohibiting access and temporarily removing the 445 acres from being used for other potential land uses. The Mary's River Project may also increase traffic generation on roads and highways within the CESA. Impacts would last the life of the project, but upon successful reclamation, the impacts should be negated to negligible in regard to land use, access and transportation.

5.15.4 Cumulative Disturbances

Of the 5,960,191 acres within the land use and access CESA, approximately 1,424,048 acres are associated with past, present, and RFFAs, which is approximately 24 percent of the CESA. The Proposed Action would increase surface disturbance within the CESA by approximately 4,193 acres to approximately 1,428,241 acres, which would also be 24 percent of the CESA. Mineral development and exploration activities (including oil, gas, and geothermal operations and the Proposed Action) have the most potential to impact land use, access, and transportation. Cumulative disturbance from mineral development and exploration operations accounts for approximately 8,334 acres, which is less than one percent of the CESA. Most of the disturbance associated with mineral development and exploration activities would be reclaimed after mining and exploration operations are completed.

5.15.5 Cumulative Effects

Considering past, present, and RFFAs within the land use and access CESA that may affect land use, access, and transportation combined with the Proposed Action (including hauling ore and loaded carbon to Gold Quarry and reactivated carbon back to Long Canyon), cumulative effects to land use, access, and transportation would be minor. Past, present, and RFFAs combined with the Proposed Action affects land use of approximately 24 percent of the CESA, which would be a minor impact in the short-term; however, there is adequate land available for other land uses within the CESA. In addition, most of the present and future disturbances would

be reclaimed which would reduce impacts to land use and access in the long-term. Cumulative effects to transportation include Annual Average Daily Traffic (AADT) increases to the transportation system within the CESA (primarily I-80). However, the Proposed Action would not have a significant increase on the AADT when compared to the existing conditions. The maximum amount of truck hauling of loaded carbon (both from Long Canyon and reactivated carbon returning from Gold Quarry) from the Proposed Action would be 208 truck trips per year both ways. An additional 10 truck trips per day would be added to the AADT for hauling ore. Cumulative traffic increase on the transportation network in the CESA would be minor.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except with less acres of disturbance within the CESA.

5.16 Visual Resources

The area is located within the Basin and Range physiographic province (USGS, 2000). According to USGS (2000), the Basin and Range province is characterized by broad, sediment-filled valleys alternating with north-south-trending, faulted mountains. Areas within the CESA have been classified as Visual Resource Management (VRM) Class I, II, III, and IV. The areas within 1.5 miles of I-80 are within the “Low Visibility Corridor”, which is managed using Class II objectives regardless if it is designated Class II, III, IV. The California Trail may be re-classified from its current VRM Class III designation but such a change would require revision of the Resource Management Plan (RMP).

5.16.1 CESA Boundary

The CESA boundary for visual resources is the local VRM area including a one-mile corridor along the pipeline from the project area through Hydrographic Basin 189D (Figure 5.16-1). The total area of this CESA is 234,082 acres. This CESA boundary was chosen because it encompasses the viewshed of the project as represented by the Key Observation Points (KOPs). The CESA includes the area where the project effects could be viewed relative to cumulative activities. Using a larger area would not capture any additional relevant effects.

5.16.2 Past and Present Disturbance

Past and present disturbance within the CESA includes mineral exploration; sand and gravel operations; roads; utilities, infrastructure and public purpose activities; oil, gas, and geothermal development; wildland fires; and limited urban development. These disturbances have potentially introduced line, form, color, and texture elements that contrast with the existing landscape. Past disturbances are in various stages of natural revegetation, which reduces the overall visual impact from past disturbances. Present disturbances would most likely require reclamation, which would help to reduce visual impacts within the CESA.

Unless they are buried, utilities and other linear projects introduce form and line elements (i.e. poles and power lines) that contrast with the surrounding features of the existing landscape. These form and line elements result in long-term visual impacts to the existing landscape.

Figure 5.16-1 Visual Resources CESA

However, after reclamation, the majority of surface disturbance resulting from utility and infrastructure projects is reclaimed, which reduces the long-term visual impact from surface disturbance.

Past and present mineral development and exploration within the CESA accounts for approximately 1,142 acres, largely from sand and gravel operations, NOIs, and the Long Canyon Exploration Project. Surface disturbance from mineral development and exploration introduces form, line, color, and texture elements that contrast with the features of the existing landscape. Reclamation of surface disturbance would reduce the long-term visual impacts from mineral development and exploration operations.

Roads within the CESA have introduced form, line, and texture elements that contrast with the features of the existing landscape. Roads within the CESA include I-80, state routes, local/county roads, BLM roads, USFS roads, and unimproved roads with no assigned name or ownership. Roads within the CESA create curvilinear, continuous lines with varying textures depending on the road surfacing.

Wildfire has affected approximately 1,620 acres of vegetation within the CESA. Burned areas, if occurring as a natural wildland event, are noticeable, but typically are not perceived as a man-caused or intrusive development.

Oasis and Montello are the primary areas of urban development within the area. Urban developments introduce form, line, color, and texture elements that contrast with the features of the existing landscape. These impacts are often long-term.

5.16.3 Reasonably Foreseeable Future Disturbances

The reasonably foreseeable future disturbances within the CESA include NOIs, sand and gravel operations, and the Wild Horse Eco Sanctuary.

The proposed NOIs and sand and gravel operations would result in impacts similar to those described for past and present mineral development and exploration operations. The Wild Horse Eco Sanctuary would include line and form elements (i.e. fences, wells, etc.) that would contrast with the existing landscape. However, range improvements already exist within the area proposed for the Wild Horse Eco Sanctuary, so additional impacts within the CESA would be negligible.

5.16.4 Cumulative Disturbances

Of the 234,082 acres within the visual CESA, approximately 10,027 acres of surface disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 4.3 percent of the CESA. The Proposed Action would increase the disturbance by approximately 4,193 acres to 14,220 acres, which is approximately six percent of the CESA. However, cumulative visual impacts are determined less by actual disturbance acreages and more on the actual visual impacts from the past, present, and RFFAs combined with the Proposed Action.

5.16.5 Cumulative Effects

Considering past, present, and RFFAs within the CESA that may affect visual resources combined with the Proposed Action, cumulative effects to visual resources would include line, form, color, and texture elements that would contrast with the existing landscape. Since reclamation would be completed on a majority of the present and foreseeable future actions, visual impacts would be reduced in the long-term. Reclaimed areas would still be visible, but would not be as obvious a visual impact. The cumulative effects from the Proposed Action on the visual resources CESA would be minor and long-term.

The North Facilities Alternative would have additional impacts to the "Low Visibility Corridor". The additional impacts would result from the placement of the heap leach facility, a growth medium material stockpile, portions of the tailing storage facility and WRSF within the corridor.

5.17 Recreation

Existing recreational use within the CESA includes fall and summer activities such as hunting, OHV and motorcycle use, mountain biking, sightseeing, hiking, and camping. The winter months provide opportunities for snowshoeing, skiing, snowmobiling, and cutting Christmas trees. Besides recreation, the primary land uses within the CESA are mineral development and exploration, oil and gas exploration, livestock grazing, and utility distribution. These land uses all have the potential to affect the quality and quantity of recreation activities within the CESA by affecting the actual acreage available for recreation, and creating visual and noise impacts within the CESA.

5.17.1 CESA Boundary

The CESA boundary for recreation resources is the BLM Wells Field Office boundary (Figure 5.15-1). The CESA boundary was chosen because it incorporates the Proposed Action, and the area where the Proposed Action would have a cumulative impact on recreation resources. The CESA boundary includes approximately 5,960,191 acres.

5.17.2 Past and Present Disturbances

Past and present disturbances within the CESA includes approximately 7,208 acres of mineral development and exploration operations. Mineral development and exploration operations within the CESA include sand and gravel operations; NOIs; the Graymont Pilot Peak Mine; the Kinsley Exploration Project; the West Pequop Exploration Project; the Long Canyon Exploration Project; the Indian Springs Exploration Project; the Maverick Springs Exploration Project; and the Big Ledge Barite Mining Operation. In addition, there is approximately 147 acres of disturbance associated with oil, gas, and geothermal development. Lands that are occupied by extractive activities often limit access during the life of the project, which would limit access to these areas for the dispersed recreation stated above. In addition, they may reduce the recreational value when vegetation and/or wildlife are affected, and may result in visual and noise impacts for those recreation users seeking experiences of isolation and solitude.

Past and present disturbance associated with utilities, infrastructure, and public purpose projects includes transmission lines; telephone and fiber optic lines; the Ruby Pipeline Project; water and sewer infrastructure; sewage treatment plants; airports; solid waste disposal sites and sanitary landfills; maintenance stations; range improvements; and railroads. Past and present disturbance associated with these activities is approximately 14,315 acres. Lands occupied by utilities, infrastructure and public purpose facilities are often no longer available for recreation. This is particularly true for public purpose facilities such as sewage treatment facilities, airports and solid waste disposal sites. Areas used for transmission lines may still be used for recreational purposes, but its value for recreational use may be affected due to the presence of the transmission line, which would be visible by recreation users.

Road disturbance within the CESA includes I-80, U.S. Highways, state routes, local/county roads, BLM roads, USFS roads, and unimproved roads with no assigned ownership. Approximately 26,392 acres (less than one percent) are associated with road disturbance within the CESA. Roads provide access to recreation areas and can also become a form of recreation. For those seeking solitude and a primitive outdoor experience, development of roads can impact the recreation experience due to the visual appearance and noise of road traffic.

Approximately 2,887 acres are associated with urban development. Urban development may restrict access for recreational use and create visual impacts for those seeking solitude and a primitive outdoor experience. However, roads constructed for urban development may make additional connections to recreation areas.

Approximately 845,370 acres of past disturbance are associated with wildland fires. These impacts are typically short-term until revegetation and/or restoration are complete. However, these past wildland fire disturbances do not typically prevent recreation access or enjoyment.

5.17.3 Reasonably Foreseeable Future Disturbances

RFFAs include mineral development and exploration operations; utilities, infrastructure, and public purpose activities; oil and gas development; road construction; urban development; and recreation and conservation activities. Mineral development and exploration activities would result in approximately 1,126 acres of surface disturbance. If the proposed exploration operations prove to be economically feasible, further mine development may occur within the CESA. Approximately 123 acres of surface disturbance would be associated with proposed utilities, infrastructure and public purpose projects. Noble Energy's Mary's River project would disturb approximately 445 acres. Approximately 97 acres would be associated with new access roads. Urban development within the CESA is proposed to expand approximately 3,675 acres, mainly in the West Wendover area. The Wells Golf Course expansion would impact approximately 80 acres. While, this would remove that area from the dispersed recreation discussed above, golfing is a form of recreation. The Wild Horse Eco Sanctuary would impact approximately 522,000 acres within the CESA. This area was previously used for grazing and is proposed within a portion of the existing spruce allotment. Since this area was previously used for grazing, impacts to recreation would be minor, with the impacts primarily resulting from

the additional fencing proposed for the project, which may reduce recreation access within this area.

5.17.4 Cumulative Disturbances

The effects of past, present, and RFFAs on recreation in the CESA result mainly from restricted access and visual disturbance as a result of mining-related activities and utility, infrastructure and public purpose projects. Of the 5,960,191 acres within the CESA, approximately 1,424,048 acres of disturbance are associated with past, present, and RFFAs, which is approximately 24 percent of the CESA. The Proposed Action would increase the disturbance within the CESA by approximately 4,193 acres to approximately 1,428,241 acres, which is also 24 percent of the CESA.

5.17.5 Cumulative Effects

For the most part, effects from past, present, and RFFAs within the recreation CESA would be temporary, except for mining features that are not reclaimed (e.g. pits, water supply wells, etc.) and transmission lines and ROWs that are not decommissioned or reclaimed, including those associated with the Proposed Action. Some ROWs, such as that for the power supply pipeline, would be owned by other entities and their use would continue after the project is completed. The Proposed Action is less than one percent of the CESA, so cumulative impacts from the Proposed Action would be negligible. Cumulative effects may include restricted access for recreation users, impacts to a primitive experience for some recreation users, and possible indirect affects on hunting through altering game animal habitat and movement patterns. However, since there is ample available area within the CESA for recreation activities, including hunting, cumulative effects resulting from the Proposed Action would be negligible.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action except with less acres of disturbance within the CESA.

5.18 Socioeconomics

The social and economic structures and relationships that are in place in the CESA in support of previous and current mining and other economic activity in the area are described in Section 3.16. Along with this description in Section 3.16, the analysis presented in Section 4.16 includes a detailed discussion of the potential direct and indirect economic effects of the Proposed Action, the North Facilities Alternative, and the No Action Alternative for the CESA.

The majority of lands in Elko County (72.7 percent) is federal land, the bulk of which is under BLM jurisdiction. Shipping, livestock, agriculture, gaming, and mining are central to the CESAs economy.

5.18.1 CESA Boundary

The CESA boundary for socioeconomics resources is Elko County (Figure 5.18-1). The total area of the CESA is 11,007,253 acres. This CESA boundary was chosen because individuals

and businesses that would be affected by the Proposed Action are primarily located in Elko County.

5.18.2 Past and Present Disturbances

All data in Section 3.16 on socioeconomic conditions, fiscal conditions, public services, and utilities apply to the CESA analysis. The past and present land uses in the CESA have had a direct effect on socioeconomics of Elko County through changes to employment (both type and number of jobs), changes in housing availability, and changes to the overall population. Major mining activity within Elko County includes Big Ledge Mine, Hollister Mine (exploration), Jerritt Canyon Mine, Meikle Mine, Midas Mine, Pilot Peak Quarry, Rossi Mine, and Storm Mine. Past and present actions have resulted in the current socioeconomic conditions in the CESA, as described in Section 3.16.

5.18.3 Reasonably Foreseeable Future Disturbances

Reasonably foreseeable projects include mineral exploration and new and continuing mining operations (Table 5.1-3). Other developments would include utility construction such as the Zephyr Power Transmission 500 kV DC Transmission Line, and oil and gas development such as the Noble Energy Mary's River Project. The Mary's River Project would produce potential employment opportunities. Future mining operations within the CESA include exploration and some expansion of existing mining operations including the Angel Wing Exploration Project; Big Ledge Mine Exploration Project; and additional exploration disturbance for the Kinsley Exploration Project. Proposed mining expansion and new mining operations include Graymont Pilot Peak mine expansions, the Victoria Mine, and transitioning Hollister Mine to a full-scale underground mine production. All of these exploration and mining operations would have a positive impact on the Elko County economy and would increase employment opportunities, potentially drawing on the local and regional workforce. Concurrent construction or operation of similar projects may result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of non-local workers. This population impact could affect socioeconomic conditions and public services and utilities.

There are several planned development projects within West Wendover. These include Port of West Wendover and Wendover Project, LLC, as well as commercial, retail, residential, resort, industrial, and aeronautical developments. These projects would have a positive economic impact on Elko County and West Wendover through increased employment opportunities in the CESA not only in the short-term construction time frame, but also in the long-term due to the employment opportunities resulting from the establishment of the new business created with the developments. New residential developments would assist with housing any population increase brought on by the future developments.

5.18.4 Cumulative Disturbances

The economy of Elko County is dependent to a large degree on mining activity, which is determined to a large extent by the market price of gold, silver, and other extracted minerals. When mineral prices are high, employment and wages rise and a shortage of skilled workers develops. Home prices tend to rise as new employees move into the area and local businesses

profit from increased spending. A drop in mineral prices or other limitations on mine development result in a reversal of this process; employment and spending fall and local businesses falter. This cyclical pattern is detrimental to the county's financial stability and its ability to plan for the future and provide reliable services to the community. Diversifying to other areas of industry would help the county financially during times of low mineral prices.

5.18.5 Cumulative Effects

The Proposed Action would contribute to the cumulative effects on socioeconomics by increasing employment, income, and the demand for housing, schools, law enforcement, fire protection and other services and infrastructure. The project would have a significant positive impact on Elko County, but may present problems such as inadequate housing and increased demand for sewage treatment, water and other county services. The addition of the Proposed Action would have limited impact on county services, but would add to the overall cumulative impact. The cumulative effects on socioeconomics in Elko County from the past, present, and RFFAs, including the Proposed Action, would be moderate.

Cumulative impacts under the North Facilities Alternative would be similar to the Proposed Action.

5.19 Environmental Justice

Neither Elko nor Wells are identified as low-income or minority populations. However, West Wendover and Wendover are identified as a low-income and minority population, as are the Elko Colony and the Wells Colony. The minority and ethnic composition, and income statistics, of Elko County are described in Section 3.17. In addition, Section 4.17 describes potential direct and indirect impacts from the Proposed Action on minority and low-income populations within Elko County.

5.19.1 CESA Boundary

The CESA boundary for Environmental Justice is Elko County (Figure 5.18-1). Total area of the CESA boundary is 11,007,253. Elko County was used as the CESA boundary because this would be the likely area where impacts to low-income and minority populations would occur as a result of the Proposed Action.

5.19.2 Past and Present Actions

The past and present land uses in the CESA include mineral development and exploration operations; utility, infrastructure and public purpose activities; oil, gas, and geothermal exploration operations; urban development; recreation activities; and livestock and grazing.

Figure 5.18-1 Socioeconomics and Environmental Justice CESA

The majority of past and present mining and exploration activities have been centered around the Midas and Tuscarora area, including Hollister explorations operations, Midas Mine, Rossi Mine, Meikle Mine, and Storm Mine. Per the EJ View, the Midas and Tuscarora area would not be classified as a low-income, minority community. Past and present development within those two areas would have no impacts on low-income and minority communities in Elko County. The Pilot Peak Mine is approximately 15 miles to the west of West Wendover, which is considered a low-income, minority community. Since the Pilot Peak Mine is 15 miles away from West Wendover, impacts to low-income, minority communities would be negligible because impacts from mining facilities (i.e. air quality, traffic, etc.) tend to dissipate as the distance increases from the mine site. In addition, anyone traveling on I-80 would have the same visual impacts associated with the Pilot Peak Mine, so impacts are spread throughout that area of the I-80 corridor. Big Ledge Mine is approximately 40 miles to the south of Jackpot, which per EJ View would be considered a low-income, minority community. However, the Big Ledge Mine is within the Snake Mountain area and has negligible impacts on low-income, minority populations in Jackpot due to its distance from Jackpot. The Big Ledge Mine and Pilot Peak Mine have the potential for positive impacts on the Jackpot and West Wendover area, since the two mines potentially employ area residents, and may increase tax revenues for the areas through purchase of goods from the two communities.

Impacts from past and present utilities, infrastructure and public purpose activities; oil, gas, and geothermal operations; and livestock grazing are dispersed throughout Elko County, and they do not place a disproportionate effect on a minority or low-income population within Elko County.

5.19.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable projects include mineral exploration and new and continuing mining operations; utilities, infrastructure and public purpose projects; oil and gas development; and urban development (primarily within West Wendover). These future activities would have similar impacts as the past and present actions described above. The urban development within West Wendover would potentially supply additional tax revenue, as well as housing and job opportunities for the West Wendover population. Future mining and exploration operations also have the potential to provide additional employment opportunities and additional tax revenue for Elko County communities, which would be a beneficial impact. The impacts from future actions would not result in impacts that are concentrated solely in minority and low-income communities within Elko County.

5.19.4 Cumulative Disturbances

The Proposed Action would increase cumulative disturbances within the CESA by approximately 4,193 acres. The Proposed Action would be located approximately 32 miles west of West Wendover, 28 miles east of the Wells Colony, 90 miles south of Jackpot, and 75 miles east of the Elko Colony. Any potential adverse effects resulting from implementation of the Proposed Action would be expected to dissipate before reaching the population of any of the minority and low-income communities specified above.

5.19.5 Cumulative Effects

Since past, present, RFFAs, and the Proposed Action have negligible impacts to low-income and minority populations, the Proposed Action, in combination with past, present, and RFFAs, would not have disproportionate cumulative effects on minority or low-income populations within the CESA.

The North Facilities Alternative would result in the same impacts as the Proposed Action.

5.20 Hazardous Materials and Waste

This section provides an inventory of existing or reasonably foreseeable future mine operations that transport hazardous material on the transportation routes analyzed for the Proposed Action (Section 3.18). The current development in the project area is the Big Springs Ranch. Regulated materials consisting of petroleum products associated with vehicle fueling and maintenance were observed during an environmental review of the Big Springs Ranch in 2010. Above-ground storage tanks with no secondary containment were noted on the property, with some visible surface soil staining. Seven areas of solid waste dumping were also observed during the environmental review (Enviroscientists, 2010). Under the Proposed Action, the use, storage, transport, and disposal of hazardous materials or solid wastes would change. Therefore, there would be an increase in the cumulative effects of these waste management activities from the Proposed Action associated with the CESA.

5.20.1 CESA Boundary

The CESA for Hazardous Materials and Wastes includes I-80 from Carlin, Nevada, to West Wendover, Nevada; County Road 790, State Route 233, and County Road 765 to the terminus of the proposed pipeline (Figure 5.15-2). Cumulative effects were analyzed by examining the potential transportation routes surrounding the project area. This CESA was chosen because the risk of a reportable quantity spill amount or fuel released to the environment is more likely during transportation than during storage or use.

5.20.2 Past and Present Actions

The transportation routes discussed in Section 3.18 have been used in the past to transport hazardous materials, including reagents and petroleum, to nearby mining operations and towns. Vehicles using these routes contain petroleum products.

Present actions which may involve the transport of chemicals on the routes (primarily I-80) analyzed include activities of Pilot Peak Quarry, Big Ledge Mine, Jerritt Canyon Mine, exploration operations at Hollister Mine, Meikle Mine, Midas Mine, Rossi Mine, and Storm Mine. These operations bring increased vehicle traffic on the analyzed transportation routes, and would involve the transport of varying amounts of chemicals, reagents and petroleum products to the sites for use in mining exploration and operation and maintenance activities. Increased traffic on the transportation routes also increases the potential for vehicle collision with a supply vehicle.

5.20.3 Reasonably Foreseeable Future Actions

Reasonably foreseeable generators of solid and/or hazardous waste associated with the CESA include the ongoing mining operations listed in Sections 5.3 and 5.20.3. Any new mining operations or construction projects would be required to comply with all state, federal, and local regulations relevant to the transport, handling, and disposal of all wastes. Proposed mineral development and exploration operations or expansions of existing operations, and oil and gas development include Hollister Underground Mine Project; Angel Wing Gold Exploration Project; Arturo Mine Project; Noble Energy Oil and Gas Exploration Project; the Victoria Mine; Big Ledge Mine Exploration Project. These projects may cause an increase in vehicular traffic on the analyzed transportation routes. New mining projects would require chemical deliveries to support construction, mining, and processing activities and removal of hazardous wastes from the sites to existing disposal facilities. Construction projects would require the mobilization of construction equipment, fuel, and possibly other chemicals needed for construction equipment. The proposed urban development within West Wendover may also require the mobilization of construction equipment, fuel and possibly chemicals needed for construction equipment.

5.20.4 Cumulative Disturbances

Under the Proposed Action or action alternatives, it is reasonable to expect that the analyzed transportation routes would be used to transport hazardous materials at levels greater than current levels.

All hazardous wastes generated during mining operations for the Proposed Action would be transported to off-site licensed facilities for treatment and disposal. All non-hazardous solid wastes would be disposed of in the proposed on-site Class III landfill. In the context of existing and reasonably foreseeable solid and hazardous waste generation locally and regionally, the Proposed Action would constitute an increase in hazardous waste generation and solid waste management in the project area, as well as increased transportation of hazardous waste on analyzed transportation routes.

The Proposed Action or action alternatives may result in potential spills of petroleum materials. However, because of the adherence to the Spill Prevention, Control and Countermeasure (SPCC) Plan, it is improbable that a leak or spill from mining operations would reach potential water sources adjacent to the mine. Many of the past, present, and RFFAs in addition to other mining operations also create the potential for chemical and petroleum spills and possible contamination of water resources along the analyzed transportation routes (Figure 3.18-1). However, BMPs and an SPCC Plan would typically be required for most of the projects and mining operations, substantially reducing the risk and the potential for cumulative effects relating to chemicals and petroleum products. The largest potential for fuel or chemical spills would be from vehicles and chemical or fuel transport trucks traveling on transportation routes (Section 3.18).

Cumulative impacts on hazardous waste are mainly due to industrial projects, especially mining. Therefore, the Proposed Action is one of the potential contributors associated with the CESA. An increase in traffic associated with the Proposed Action and other RFFAs could increase the

likelihood of vehicle collisions on the access roads, thus possibly increasing the probability of accidents resulting in a release of a hazardous material. Use of off-site hazardous waste disposal facilities would increase for disposal of the increased volumes of hazardous waste.

With proper implementation of the Emergency Response Plan for on- and off-site incidents, cumulative impacts associated with storage, use, and transportation of hazardous materials would not be anticipated.

5.20.5 Cumulative Effects

Given the existing capacity and regulatory framework for generators, transporters, and storage and disposal facilities, the Proposed Action, in combination with the other projects, would have negligible effects on hazardous materials and wastes generation and management. As noted in Section 3.18, the Proposed Action would comply with all local, state, and federal regulatory requirements.

The cumulative effects to hazardous materials and wastes under the North Facilities Alternative would be the same as those under the Proposed Action.